

Environnement
Canada
Lands
Directorate

Environnement
Canada
Direction générale
des terres

CLDS/CGIS

CATALOGUE OF REPORTS

Canada and its system
système de données sur les terres du Canada
Canada



CLDS/CGIS

CATALOGUE OF REPORTS

The Canada Land Data System (CLDS) is an organization that analyses and stores geographic information about Canada's land surfaces. Information such as: land capacity for recreational use, its capacity to grow forests and its capacity to sustain wildlife, has proven vital for land use planning, managing and monitoring. Applied uses of the CLDS have resulted in: land inventories, land use policies, environment impact assessments and resource management programs.

The Canada Geographic Information System (CGIS) is a computer system that enters information into, processes and accesses information from, the CLDS data base. The CGIS can enter vast quantities of data obtained from maps into the CLDS. The system enables users to access that data and to output the stored information in usable form.

This Catalogue lists: 1) the manuals that have been written about CLDS and CGIS; 2) the computer reports of raw data generated by CGIS; and, 3) the application reports written based on information obtained from CLDS.

Canada Land Data Systems Division
Lands Directorate
Environment Canada
Ottawa, Ontario
K1A 0E7

C.L. MacDonald
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Edition 3

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TABLE OF CONTENTS

OCT. 83

CLM

SECTION		PAGE
1.	INTRODUCTION	1-1
1.1	The CLDS	1-1
1.2	The Reports in this Catalogue	1-2
1.3	The Report Numbering Scheme	1-3
1.4	Classes of Information	1-4
2.	CLDS/CGIS REFERENCE MANUALS	2-1
3.	CLI RAW DATA REPORTS	
3-1	Summary by Province	3-1
3.2	Summary by CLI Sector	3-6
3.3	Detailed Report List	3-9
4.	APPLICATION REPORTS BASED ON CLDS/CGIS	4-1
APPENDIX A - CLASSES OF INFORMATION		A-1
A.1	How CLDS Stores Land Data	A-1
A.2	CLI Reporting Units	A-2
A.3	Ways of Coding and Recording CLI Data	A-6
A.4	CLI Classifications	A-8
A.5	Lands Directorate Offices	A-34
APPENDIX B - REPORT REQUEST FORM		B-1

CLDS

LANDS DIRECTORATE
ENVIRONMENT CANADA

CLDS/CGIS CATALOGUE OF REPORTS

SECTION: 1. INTRODUCTION	DATE OCT 83	PAGE: 1-1
SUB-SECTION 1.1 THE CLDS	AUTHOR CLM	REVISION 3

1. INTRODUCTION

1.1 THE CLDS

The Canada Land Data System (CLDS), administered by the Lands Directorate, Environment Canada, is an organization which handles land resource information. CLDS, through its main computer system - the Canada Geographic Information System (CGIS) - stores, manipulates, analyses and produces land data in various forms.

CLDS-produced data provides federal and provincial government departments, crown corporations, universities and various land resource analysis groups with information that is necessary to efficiently plan, manage and monitor land use.

The CLDS provides access to this information by storing more than 7,000 digitized maps in its data bank. These maps include:

- the Canada Land Inventory (CLI) land capability for forestry, agriculture, recreation, waterfowl, ungulates and land use;
- updated land use data;
- 1971 and 1976 census boundaries;
- watershed boundaries; and,
- ecological land data.

The CLDS was originally designed to meet the needs of the Canada Land Inventory. However, since its inception in 1968, many new subsystems have been added and functions have proven to be useful to other departments, agencies, institutions and organizations, providing them with a wide variety of land use information.

000003

CLDS
LANDS DIRECTORATE
ENVIRONMENT CANADA

CLDS/CGIS
CATALOGUE
OF REPORTS

SECTION: 1. INTRODUCTION	DATE: OCT 83	1-2
SUB-SECTION: 1.2 REPORTS AND MANUALS	AUTHOR: CLM	REVISION: 3

1.2 REPORTS AND MANUALS IN THIS CATALOGUE

This catalogue describes and lists over fifty reports and manuals. For easy user reference, these reports and manuals have been divided into three categories:

1. CLDS/CGIS Manuals;
2. Raw Data Reports;
3. Application Reports based on CLDS/DGIS Data.

CLDS/CGIS MANUALS

These are manuals that have been written about CLDS and CGIS. They introduce CLDS and CGIS to the reader, and describe their function and use.

RAW DATA REPORTS GENERATED BY CGIS

These reports list data generated by the use of CGIS. The data contained in these reports is used by resource managers when writing land resource analysis reports and studies.

APPLICATION REPORTS BASED ON CLDS/CGIS DATA

These are reports based on the interpretation of information obtained from the CLDS. The authors of these reports use CGIS to convert land information from maps into data stored in data bases, and apply these data bases to provide information for research and planning.

CLDS
LANDS DIRECTORATE
ENVIRONMENT CANADA

CLDS/CGIS
CATALOGUE
OF REPORTS

SECTION: 1. INTRODUCTION	DATE: OCT 83	1-3
SUB-SECTION: 1.3 THE REPORT NUMBERING SCHEME	AUTHOR: CLM	REVISION: 3

1.3 THE REPORT NUMBERING SCHEME

For easy user access each report and manual has been assigned a unique report number.

CLDS/CGIS MANUALS

The documents in this category are numbered from R000010 to R001999.

RAW DATA REPORTS

These reports are numbered from R002000 to R002999. When requesting any of these reports, include the province or provinces required as well as the report number as some reports are divided into different sections according to province and territory.

APPLICATION REPORTS BASED ON CLDS/CGIS DATA

The application reports are numbered from R003000 to R003999.

000005

CLDS
LANDS DIRECTORATE
ENVIRONMENT CANADA

CLDS/CGIS
CATALOGUE
OF REPORTS

SECTION: 1. INTRODUCTION	DATE: OCT 83	
SUB-SECTION: 1.4 CLASSES OF INFORMATION	AUTHOR: CLM	REVISION: 3

1.4 CLASSES OF INFORMATION

Provinces, and sometimes groups of provinces have been divided into territorial and geographical units. These units are called Reporting Units and they are used to provide convenient units for researchers when categorizing Canada's many land use capabilities. By parcelling land into: census divisions; electoral divisions; and watershed divisions, the CGIS can list Canada's various land use capabilities for specific geographical areas and regions.

The Canada Land Inventory maps describe Canada's geographic land capabilities for:

- recreation;
- agriculture;
- land use;
- forestry;
- waterfowl; and,
- ungulates.

In the CLI classification system each of these six sectors has been divided into classes and subclasses for quick and precise reference.

This section is a summary of the land capability classifications contained in Appendix A. Appendix A should be consulted for a detailed description of each CLI sector, class and subclass.

RECREATION

The CLI has rated lands for their capability to sustain outdoor recreation by dividing them into seven classes and twenty five subclasses.

AGRICULTURE

Mineral soils have been grouped according to their potential and limitations for agricultural use. There are eight classes of land and thirteen subclasses.

000006

CLDS
LANDS DIRECTORATE
ENVIRONMENT CANADA

CLDS/CGIS
CATALOGUE
OF REPORTS

SECTION: 1. INTRODUCTION	DATE: OCT 83	1-5
SUB-SECTION: 1.4 CLASSES OF INFORMATION	AUTHOR: CLM	REVISION: 2

LAND USE

The CLI has classified land according to its specific purpose and potential. There are six classes and fourteen subclasses of land for specific use.

FORESTRY

Mineral and organic soils have been grouped into one of six classes based on their capability to grow commercial timber. The classes have been further divided into seventeen subclasses.

WATERFOWL

Land has also been classified by its ability to sustain waterfowl. There are eleven classes and twelve subclasses of such land.

UNGULATES

The CLI, as with waterfowl, has classified land according to its potential to support ungulate life. There are ten classes and eleven subclasses of land in this regard.

000007

Section 2

CLDS/CGIS REFERENCE MANUALS

This section contains a list of documents and manuals that introduce and describe the Canada Land Data System (CLDS) and Canada Geographic Information System (CGIS), and their use.

This list includes publications concerning CLDS and CGIS that can be obtained from the Lands Directorate Environment Canada.

Each publication is assigned a report number. The publications are identified by name, by a brief description, by date of publication, and by number of pages. Report numbers range from R00010 to R001999.



CLDS

LANDS DIRECTORATE
ENVIRONMENT CANADA

CLDS/CGIS CATALOGUE OF REPORTS

SECTION: 2. CLDS/CGIS REFERENCE MANUALS	DATE OCT 83	PAGE: 2-1
SUB-SECTION:	AUTHOR: CLM	REVISION: 3

Report
Number

Description

R000010 CLDS BROCHURE (Published)

The brochure introduces the CLDS/CGIS. It outlines some of the capabilities and services provided by the organization.

1980

R000011 CLDS/CGIS Catalogue of Reports (Unpublished)

This catalogue itemizes the three report series available through CLDS: system series, application series and CLI raw data series. The first two are published and unpublished papers describing various aspects of the system and actual applications. The third is a series of tabulations generated from the Canada Land Inventory data.

October 1981; 60 pages

R000012 CLDS/CGIS Catalogue of Data Holdings (Unpublished)

This catalogue shows the coverage, by theme, of the CLDS data bank. Index maps are used to present the information in a quick look form.

October 1981, pages

R001000 CGIS OVERVIEW (Unpublished)

This paper provides a brief synopsis of the Canada Geographic Information System (CGIS).

March 81; 13 pages

000009

CLDS
LANDS DIRECTORATE
ENVIRONMENT CANADA

CLDS/CGIS
CATALOGUE
OF REPORTS

SECTION: 2. CLDS/CGIS REFERENCE MANUALS		DATE: OCT 83	PAGE: 2-2
SUB - SECTION:		AUTHOR: CLM	REVISION: 3
Report Number	Description		
R001010	CLDS - SELECTED PAPERS I (Unpublished)		
	Several papers giving a general description of the Canada Land Data System (CLDS) stressing its capabilities. These papers were presented at various conferences; Auto Carto IV (Reston 1979), Harvard Computer Graphics Week 1980 and URISA (Toronto 1980).		
	1979 - 1980; 46 pages		
R001090	INTERACTIVE GRAPHICS SUBSYSTEM (IGSS): VERSION 5 USERS GUIDE (Unpublished)		
	The Interactive Graphics Subsystem (IGSS) provides interactive retrieval for both map and tabular data. This guide describes the system and the available commands. It is a reference guide for the user.		
	January 1980; 56 pages		
R001130	INTRODUCTION TO THE INTERACTIVE GRAPHICS SUBSYSTEM (Unpublished)		
	This introduction to the IGSS gives examples of the map and tabular outputs which can be created by the user. A sample request is illustrated.		
	March 1981; 13 pages		

000010

CLDS

LANDS DIRECTORATE
ENVIRONMENT CANADA

CLDS/CGIS CATALOGUE OF REPORTS

SECTION: 2. CLDS/CGIS REFERENCE MANUALS	DATE: OCT 83	PAGE: 2-3
SUB-SECTION:	AUTHOR: CLM	REVISION: 3

Report Number	Description
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R001140	CANADA LAND DATA SYSTEM OVERVIEW (Unpublished)
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This document briefly outlines the organization, the computer systems available, the map data bank and applications of the system.

March 81; 28 pages

R001150	INTRODUCTION TO THE CGIS (Unpublished)
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This paper provides a more indepth, technical description of the CGIS, one of the computer systems available through CLDS.

March 1981; 42 pages

R001160	SIRE SYSTEM - PROGRESS REPORT NO. 1 (Unpublished)
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The Scanning Input and Raster Editing system (SIRE) is currently under development. This system is expected to greatly enhance the input capabilities of the CLDS.

June 1983; 7 pages

000011

CLDS
LANDS DIRECTORATE
ENVIRONMENT CANADA

CLDS/CGIS
CATALOGUE
OF REPORTS

SECTION: 2. CLDS/CGIS REFERENCE MANUALS		DATE: OCT 83	PAGE: 2-4
SUB-SECTION:		AUTHOR: CLM	REVISION: 3

Report Number	Description
R001200	A COMPACT REPRESENTATION OF PLANAR CURVES (T.B. No.1) An algorithm, and its IBM Assembler implementation, are presented which efficiently store the representation of curves and regional boundaries for spatial data processing. Essentially a form of "chain-encoding", the algorithm described here provides for efficient storage of both straight and wavy curves. The algorithm uses a half byte (4 bits) as the basic storage unit and keeps track of the relative direction, as well as the relative distance, from one vertex to the other along the curve. The compacted representation of the line can accommodate up to eight vertices per word (32 bits), with additional storage required for long segments and abrupt direction changes. June 1980; 18 pages
R001210	COORDINATE TRANSFORMATIONS FOR SPATIAL DATA PROCESSING (T.B. No. 2) An algorithm and its FORTRAN implementation are presented which efficiently convert X-Y table coordinates into standard geographic units (latitude/longitude). As such algorithms form an integral part of many spatial data reduction systems, it is imperative that they minimize the number of computations required to transform the thousands of coordinate pairs originating from digitizer tables or automatic scanners. The algorithm is adaptable to both batch and online applications and is flexible in adjusting required accuracy to efficient usage of core storage and execution time. August 1980; 45 pages

CLDS
LANDS DIRECTORATE
ENVIRONMENT CANADA

CLDS/CGIS
CATALOGUE
OF REPORTS

SECTION: 2. CLDS/CGIS REFERENCE MANUALS		DATE: OCT 83	2-5
SUB - SECTION:		AUTHOR: CLM	REVISION: 3

<u>Report Number</u>	<u>Description</u>
R001220	A COORDINATE REFERENCE SYSTEM FOR SPATIAL DATA PROCESSING (T.B. No. 3) This paper describes the geographic referencing system and technique of spatial subdivision employed by the Canada Land Data Systems to form the basic backbone of the Canada Geographic Information System (CGIS). The later are essential components in the system's capability to generate national land data bases and to perform multiple layer overlays of thematic map data. The spatial referencing technique is based on the standard geographic system of parallels and meridians and can be applied to almost any sized area on the Earth's surface. The referencing system is flexible in allowing changes of origin and setting the internal resolution to match the mapping scale. November 1981; 22 pages
R001230	GEODETTIC COMPUTATIONS FROM GEOGRAPHICALLY REFERENCED COORDINATE DATA (T.B. No.4) The theory and a proven methodology for geodetic computations of spatial data stored on a uniform grid of longitudes and latitudes is presented. These computations are complicated by the fact that the natural system of parallels and meridians represents the curved surface of an ellipsoid. The methodology employs approximative techniques to overcome the lengthy and time consuming computations normally required to compute areas of regions defined by geographic coordinates. The implications of using such approximative techniques with respect to accuracy are also discussed. August 1980; 26 pages

000013

CLDS

LANDS DIRECTORATE ENVIRONMENT CANADA

CLDS/CGIS CATALOGUE OF REPORTS

SECTION: 2. CLDS/CGIS REFERENCE MANUALS		DATE: OCT 83	REV: 2-4
SUB-SECTION:		AUTHOR: CLM	REVISION: 3

<u>Report Number</u>	<u>Description</u>
R001240	FUNCTIONAL COMPONENTS OF CARTOGRAPHIC RASTER SCANNING SYSTEMS (T.B. No.7) Cartographic raster scanning systems which combine various scanning technologies and sophisticated data handling techniques have been developed for some time and are now available commercially. This paper presents a general overview of these existing systems, identifies their functional components and attempts to identify their strengths and weaknesses in a production environment. March 1983; 16 pages
R001250	COMPRESSION AND COMPACTION OF BINARY RASTER IMAGES (T.B. No.9) The raster scanning of large line-art images common in cartographic applications yields large binary images which must be stored and processed with the upmost efficiency. Although known data compression techniques have been effectively applied in this technology, the computational resources required to process these images are on an escalating trend as the processing logic becomes more sophisticated and the demands on raster scanning systems continue to grow. Recent developments at Canada Land Data Systems have shown that further reductions in both storage requirements and processing time can be achieved by utilizing more specialized image compression and compaction techniques. A new technique for reducing the resolution of binary images with no loss in topography and minimal loss in topology has been developed. This new technique is based on an existing line thinning algorithm and offers great savings in both the storage requirements and processing time required to process large line-art images.

Section 3

CLI RAW DATA REPORTS

This section lists the computer reports containing raw data that have been generated by the Canada Geographic Information System (CGIS). These raw data reports were derived from the 1:250,000 Canada Land Inventory (CLI) maps. The data contained in these reports has proven to be essential for writing land use and resource reports and studies.

The information contained in these reports can be used to:

- 1) plan, manage and monitor land use;
- 2) define areas of conflict between competing resource users;
- 3) conduct country-wide surveys of land capability and uses; and,
- 4) create data for input into other geographic information systems.

There are three ways to find these computer generated reports of raw data. The reports have been:

- 1) tabulated by Province (Section 3.1);
- 2) tabulated by CLI Sector (Section 3.2); and
- 3) listed by Report Number in a Detailed Report List (Section 3.3).

The Detailed Report List catalogues all reports numerically by report number. For each report the following information is listed:

- 1) the report number; (ranging from R002000 to R002999);
- 2) the report name;
- 3) a brief description of the report's content;
- 4) the date of the report's creation;
- 5) the reporting unit (acres, hectares, kilometres);
- 6) the class breakdown (decomplexed or primary); and,
- 7) the number of pages contained in the report or section of the report.



CLDS

LANDS DIRECTORATE
ENVIRONMENT CANADA

CLDS/CGIS CATALOGUE OF REPORTS

SECTION: 3. CLI RAW DATA REPORTS DATE OCT 83 PAGE: 3-1

SUB-SECTION: 3.1 SUMMARY BY PROVINCE AUTHOR CLM REVISION: 3

NEWFOUNDLAND

CLI SECTORS		REPORTING UNITS			
	Census Division CD	Electoral District ED	Watershed	Cross Tabulation (see text)	Other (see text)
Agriculture					
Recreation					R002030
Waterfowl					
Ungulates		R002310 R002350			
Forestry					
Land Use					R002370

000017

CLDS
LANDS DIRECTORATE
ENVIRONMENT CANADA

CLDS/CGIS
CATALOGUE
OF REPORTS

SECTION: 3. CLI RAW DATA REPORTS	DATE: OCT 83	PAGE: 3-2
SUB-SECTION: 3.1 SUMMARY BY PROVINCE	AUTHOR: CLM	REVISION: 3

PRINCE EDWARD ISLAND

CLI SECTORS

REPORTING UNITS

	Census Division CD	Electoral District ED	Watershed	Cross Tabulation (see text)	Other (see text)
Agriculture	R002150	R002160	R002170 R002180 R002190	R002020 R002090 R002100	
Recreation					R002030
Waterfowl	R002250	R002260	R002270 R002280 R002290	R002090 R002100	
Ungulates					
Forestry	R002380	R002390	R002400 R002410 R002420		R002050
Land Use				R002020	R002010 R002370

CLDS

LANDS DIRECTORATE
ENVIRONMENT CANADA

CLDS/CGIS CATALOGUE OF REPORTS

SECTION: 3. CLI RAW DATA REPORTS	DATE OCT 83	PAGE: 3-3
SUB-SECTION: 3.1 SUMMARY BY PROVINCE	AUTHOR: CLM	REVISION: 3

NOVA SCOTIA, NEW BRUNSWICK, QUEBEC
ONTARIO, ALBERTA, SASKATCHEWAN

CLI SECTORS		REPORTING UNITS			
	Census Division CD	Electoral District ED	Watershed	Cross Tabulation (see text)	Other (see text)
Agriculture	R002150	R002160	R002170 R002180 R002190	R002020 R002090 R002100	
Recreation	R002200	R002210	R002220 R002230 R002240		R002030
Waterfowl	R002250	R002260	R002270 R002280 R002290	R002090 R002100	
Ungulates	R002300	R002310 R002350	R002320 R002330 R002340		
Forestry	R002380	R002390	R002400 R002410 R002420		
Land Use				R002020	R002010 R002370

CLDS
LANDS DIRECTORATE
ENVIRONMENT CANADA

CLDS/CGIS
CATALOGUE
OF REPORTS

SECTION: 3. CLI RAW DATA REPORTS				DATE: OCT 83	PAGE: 3-4
SUB-SECTION: 3.1 SUMMARY BY PROVINCE				AUTHOR: CLM	REVISION: 3
MANITOBA					
CLI SECTORS			REPORTING UNITS		
	Census Division CD	Electoral District ED	Watershed	Cross tabulation (see text)	Other (see text)
Agriculture	R002150	R002160	R002170 R002180 R002190	R002020 R002090 R002100	
Recreation	R002200	R002210	R002220 R002230 R002240		R002030
Waterfowl	R002250	R002260	R002270 R002280 R002290	R002090 R002100	
Ungulates	R002300	R002310 R002350	R002320 R002330 R002340		R002360
Forestry	R002380	R002390	R002400 R002410 R002420		
Land Use				R002020	R002010 R002370

CLDS

LANDS DIRECTORATE
ENVIRONMENT CANADA

CLDS/CGIS CATALOGUE OF REPORTS

SECTION: 3. CLI RAW DATA REPORTS			DATE: OCT 83	PAGE: 3-5	
SUB-SECTION: 3.1 SUMMARY BY PROVINCE			AUTHOR: CLM	REVISION: 3	
BRITISH COLUMBIA					
CLI SECTORS		REPORTING UNITS			
	Census Division CD	Electoral District ED	Watershed	Cross Tabulation (see text)	Other (see text)
Agriculture					
Recreation	R002200	R002210	R002220 R002230 R002240		R002030
Waterfowl	R002250	R002260	R002270 R002280 R002290		
Ungulates	R002300	R002310 R002350	R002320 R002330 R002340		
Forestry					
Land Use					

CLDS
LANDS DIRECTORATE
ENVIRONMENT CANADA

CLDS/CGIS
CATALOGUE
OF REPORTS

SECTION: 3. CLI RAW DATA REPORTS	DATE: OCT 83	PAGE: 3-6
SUB-SECTION: 3.2 SUMMARY BY CLI SECTOR	AUTHOR: CLM	REVISION: 3

AGRICULTURE

REPORTING UNITS

	Census Division CD	Electoral District ED	Watershed	Cross Tabulation (see text)	Other (see text)
Newfoundland B.C.					
P.E.I.	R002150	R002160	R002170	R002020	
Nova Scotia			R002180	R002090	
New Brunswick			R002190	R002100	
Quebec					
Ontario					
Manitoba					
Saskatchewan					
Alberta					

RECREATION

REPORTING UNITS

	Census Division CD	Electoral District ED	Watershed	Cross Tabulation (see text)	Other (see text)
Newfoundland P.E.I.					R002030
Nova Scotia	R002200	R002210	R002220		R002030
New Brunswick			R002230		
Quebec			R002240		
Ontario					
Manitoba					
Saskatchewan					
Alberta					
B.C.					

CLDS

LANDS DIRECTORATE ENVIRONMENT CANADA

CLDS/CGIS CATALOGUE OF REPORTS

SECTION: 3. CLI RAW DATA REPORTS DATE: OCT 83 PAGE: 3-7

SUB-SECTION: 3.2 SUMMARY BY CLI SECTOR AUTHOR: CLM REVISION: 3

WATERFOWL		REPORTING UNITS			
	Census Division CD	Electoral District ED	Watershed	Cross Tabulation (see text)	Other (see text)
Newfoundland					
P.E.I.	R002250	R002260	R002270	R002090	
Nova Scotia			R002280	R002100	
New Brunswick			R002290		
Quebec					
Ontario					
Manitoba					
Saskatchewan					
Alberta					
B.C.	R002250	R002260	R002270 R002280 R002290		

UNGULATES		REPORTING UNITS			
	Census Division CD	Electoral District ED	Watershed	Cross Tabulation (see text)	Other (see text)
Newfoundland		R002310 R002350			
P.E.I.					
Nova Scotia	R002300	R002310	R002320		
New Brunswick		R002350	R002330		
Quebec			R002340		
Ontario					
Saskatchewan					
Alberta					
B.C.					
Manitoba	R002300	R002310 R002350	R002320 R002330 R002340		R002360

000023

CLDS

LANDS DIRECTORATE ENVIRONMENT CANADA

CLDS/CGIS

CATALOGUE OF REPORTS

SECTION: 3. CLI RAW DATA REPORTS	DATE: OCT 83	PAGE: 3-8
SUB-SECTION: 3.2 SUMMARY BY CLI SECTOR	AUTHOR: CLM	REVISION: 3

FORESTRY		REPORTING UNITS			
	Census Division CD	Electoral District ED	Watershed	Cross Tabulation (see text)	Other (see text)
Newfoundland					
B.C.					
P.E.I.					
Nova Scotia					
New Brunswick					
Quebec	R002380	R002390	R002400		
Ontario			R002410		
Manitoba			R002420		
Saskatchewan					
Alberta					

LAND USE		REPORTING UNITS			
	Census Division CD	Electoral District ED	Watershed	Cross Tabulation (see text)	Other (see text)
Newfoundland					R002370
P.E.I.				R002020	R002010
Nova Scotia					R002370
New Brunswick					
Quebec					
Ontario					
Manitoba					
Saskatchewan					
Alberta					
B.C.					

CLDS

LANDS DIRECTORATE ENVIRONMENT CANADA

CLDS/CGIS CATALOGUE OF REPORTS

SECTION: 3. CLI RAW DATA REPORTS	DATE: OCT 83	PAGE: 3-9
SUB-SECTION: 3.3 DETAILED REPORT LIST	AUTHOR: CLM	REVISION: 3

Report Number	Description
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R002010 1965 LAND USE BY PROVINCE

1965 CLI land use classes are tabulated by province. All provinces except Newfoundland and British Columbia are included in one report.

Data source: 1:250,000 CLI maps; decomplexed class;

December 1975; Acres; 9 pages

R002020 AGRICULTURE - 1965 LAND USE CROSS TABULATION

Agriculture capability class is tabulated by land use class for each province. All provinces except British Columbia and Newfoundland are included in the report.

Data source: 1:250,000 CLI maps; decomplexed class;

October 1976; Acres; 16 pages

R002030 RECREATION AREA AND SHORELINE

This report tabulates recreation class and feature by province. For each class-feature combination, the area and shoreline length are given. The report is available for all provinces in four sections.

Data source: 1:250,000 CLI maps; by primary class;

November 1976, BC-February 1977; Acres, Hectares, Kilometers;

Nfld, P.E.I., N.S., N.B.	- 99 pages
Quebec, Ontario	- 86 pages
Man., Sask., Alta	- 110 pages
B.C.	- 68 pages

CLDS
LANDS DIRECTORATE
ENVIRONMENT CANADA

CLDS/CGIS
CATALOGUE
OF REPORTS

SECTION: 3. CLI RAW DATA REPORTS

DATE: OCT 83 **Page 3-10**

SUB-SECTION: 3.3 DETAILED REPORT LIST

AUTHOR: CLM REVISION: 3

<u>Report Number</u>	<u>Description</u>
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R002090	PRIMARY AGRICULTURE CLASSES AGAINST WATERFOWL CLASSES
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This report is in two parts. The first tabulates primary agriculture capability classes against primary waterfowl capability class. The second part tabulates primary agriculture classes against the complete waterfowl classification (see Appendix A). This report is available for all provinces except British Columbia and Newfoundland in three sections.

Data source: 1:250,000 CLI maps; by primary class;

March and April 1978; Hectares;

P.E.I., N.B., N.S.	- 47 pages
Quebec, Ontario	- 114 pages
Man., Sask., Alta	- 68 pages

R002100	DECOMPLEXED AGRICULTURE CLASSES AGAINST WATERFOWL CLASSES
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This report is the same as R002090 except that the agriculture capability has been decomplexed (see Appendix A.3.1). This report is available for all provinces except Newfoundland and British Columbia in three sections.

Data source: 1:250,000 CLI maps; decomplexed class;

March and April 1978; Hectares;

P.E.I., N.B., N.S.,	- 47 pages
Quebec, Ontario	- 114 pages
Man., Sask., Alta	- 68 pages

CLDS

LANDS DIRECTORATE ENVIRONMENT CANADA

CLDS/CGIS

CATALOGUE OF REPORTS

SECTION: 3. CLI RAW DATA REPORTS	DATE: OCT 83	3-11
SUB-SECTION: 3.3 DETAILED REPORT LIST	AUTHOR: CLM	REVISION: 3

Report
Number Description

R002150 AGRICULTURE CAPABILITY BY CENSUS DIVISION WITHIN PROVINCE

Agriculture capability classes by subclasses are tabulated by 1976 census division within each province. This report is available for all provinces except Newfoundland and British Columbia in three sections.

Data source: 1:250,000 CLI maps; decomplexed class;

January 1980, Alta-August 1979; Hectares;

P.E.I., N.S., N.B.	- 39 pages
Quebec, Ontario	- 129 pages
Man., Sask., Alta	- 58 pages

R002160 AGRICULTURE CAPABILITY BY ELECTORAL DISTRICT WITHIN PROVINCE

Agriculture capability classes by subclasses are tabulated by 1976 federal electoral district within each province. This report is available for all province except Newfoundland and British Columbia in four sections.

Data source: 1:250,000 CLI maps; decomplexed class;

March and April 1979; Hectares;

P.E.I., N.S., N.B.	- 28 pages
Quebec	- 74 pages
Ontario	- 90 pages
Man., Sask., Alta	- 48 pages

CLDS
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ENVIRONMENT CANADA

CLDS/CGIS
CATALOGUE
OF REPORTS

SECTION: 3. CLI RAW DATA REPORTS	DATE: OCT 83	3-18
SUB-SECTION: 3.3 DETAILED REPORT LIST	AUTHOR: CLM	REVISION: 3

Report
Number

Description

- R002170 AGRICULTURE CAPABILITY BY WATERSHED DIVISION WITHIN PROVINCE
- Agriculture capability classes by subclasses are tabulated for each province by main watershed division. The report is available for all provinces except Newfoundland and British Columbia.
- Data source: 1:250,000 CLI maps; decomplexed class;
- March and April 1979; Hectares; 32 pages
- R002180 AGRICULTURE CAPABILITY BY WATERSHED SUB-DIVISION WITHIN PROVINCE
- Same as R002170 except that reporting is at a more detailed watershed level. The report is available for all provinces except Newfoundland and British Columbia in three sections.
- Data source: 1:250,000 CLI maps; decomplexed class;
- March and April 1979; Hectares;
- | | |
|--------------------|------------|
| P.E.I., N.S., N.B. | - 14 pages |
| Quebec, Ontario | - 46 pages |
| Man., Sask., Alta | - 55 pages |

CLDS
LANDS DIRECTORATE
ENVIRONMENT CANADA

CLDS/CGIS
CATALOGUE
OF REPORTS

SECTION: 3. CLI RAW DATA REPORTS	DATE: OCT 83	PAGE: 2-13
SUB-SECTION: 3.3 DETAILED REPORT LIST	AUTHOR: CLM	REVISION: 3

Report
Number

Description

R002190 AGRICULTURE CAPABILITY BY WATERSHED SUB-SUB-DIVISION WITHIN PROVINCE

Same as R002180 but further broken down into catchment areas of streams or stream systems at the tributary level. The report is available for all provinces except Newfoundland and British Columbia in four sections.

Data source: 1:250,000 CLI maps; decomplexed class; March and April 1979; Hectares;

P.E.I., N.S., N.B.,	- 88 pages
Quebec, Ontario	- 181 pages
Man., Sask.	- 140 pages
Alta	- 118 pages

R002200 RECREATION CAPABILITY BY CENSUS DIVISION WITHIN PROVINCE

Recreation capability classes by subclasses are tabulated by 1976 census division within each province. Cross-tabulation is by the primary subclass only. The report is available for all provinces except Newfoundland and Prince Edward Island in three sections.

Data source: 1:250,000 CLI maps; decomplexed class;

September and December 1979, February 1980; Hectares;

N.B., N.S.	- 40 pages
Quebec, Ontario	- 144 pages
Man., Sask., Alta, B.C.	- 108 pages

CLDS
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ENVIRONMENT CANADA

**CLDS/CGIS
CATALOGUE
OF REPORTS**

SECTION: 3. CLI RAW DATA REPORTS	DATE: OCT 83	PAGE: 3-14
SUB-SECTION: 3.3 DETAILED REPORT LIST	AUTHOR: CLM	REVISION: 3

Report
Number

Description

R002210 RECREATION CAPABILITY BY ELECTORAL DISTRICT WITHIN PROVINCE

Recreation capability classes by primary subclasses are tabulated by 1976 federal electoral district within each province. The report is available for all provinces except Prince Edward Island and Newfoundland in four sections.

Data source: 1:250,000 CLI maps; decomplexed class;

November and December 1979; Hectares;

N.S., N.B.	- 31 pages
Quebec	- 84 pages
Ontario	- 91 pages
Man., Sask., Alta, B.C.	- 87 pages

R002220 RECREATION CAPABILITY BY WATERSHED DIVISION WITHIN PROVINCE

Recreation capability classes by primary subclasses are tabulated for each province by main watershed division. The report is available for all provinces except Newfoundland and Prince Edward Island.

Data source: 1:250,000 CLI maps; decomplexed class;

November 1979; Hectares; 46 pages

CLDS
LANDS DIRECTORATE
ENVIRONMENT CANADA

CLDS/CGIS
CATALOGUE
OF REPORTS

SECTION: 3. CLI RAW DATA REPORTS	DATE: OCT 83	PAGE: 3-15
SUB-SECTION: 3.3 DETAILED REPORT LIST	AUTHOR: CLM	REVISION: 3

Report
Number

Description

R002230 RECREATION CAPABILITY BY WATERSHED SUB-DIVISION WITHIN PROVINCE

Same as R002220 except that reporting is at a more detailed watershed level. The report is available for all provinces except Newfoundland and Prince Edward Island in three sections.

Data source: 1:250,000 CLI maps; decomplexed class;

November 1979; Hectares;

N.S., N.B. - 17 pages
Quebec, Ontario - 58 pages
Man., Sask., Alta, B.C. - 110 pages

R002240 RECREATION CAPABILITY BY WATERSHED SUB-SUB-DIVISION WITHIN PROVINCE

Same as R002230 but further broken down into catchment areas of streams or stream system at the tributary level. The report is available for all provinces except Newfoundland and Prince Edward Island in five sections.

Data source: 1:250,000 CLI maps; decomplexed class;

November 1979; Hectares;

N.S., N.B. - 86 pages
Quebec, Ontario - 185 pages
Man., Sask. - 142 pages
Alta - 118 pages
B.C. - 116 pages

CLDS
LANDS DIRECTORATE
ENVIRONMENT CANADA

CLDS/CGIS
CATALOGUE
OF REPORTS

SECTION: 3. CLI RAW DATA REPORTS		DATE: OCT 83	3-16
SUB-SECTION: 3.3 DETAILED REPORT LIST		AUTHOR: CLM	REVISION: 3

<u>Report Number</u>	<u>Description</u>
R002250	WATERFOWL CAPABILITY BY CENSUS DIVISION WITHIN PROVINCE Waterfowl capability classes by subclasses are tabulated by 1976 census division within each province. Both land and water areas are tabulated. The report is available for all provinces except Newfoundland in three sections. Data source: 1:250,000 CLI maps; decomplexed class; October to February 1980; Hectares; P.E.I., N.S., N.B. - 48 pages Quebec, Ontario - 156 pages Man., Sask., Alta, B.C. - 173 pages
R002260	WATERFOWL CAPABILITY BY ELECTORAL DISTRICT WITHIN PROVINCE Waterfowl capability classes by subclasses are tabulated by 1976 federal electoral district within each province. Both land and water areas are tabulated. The report is available for all provinces except Newfoundland in four sections. Data source: 1:250,000 CLI maps; decomplexed class; August 1979, B.C. January 1980; Hectares; P.E.I., N.S., N.B. - 44 pages Quebec - 105 pages Ontario - 96 pages Man., Sask., Alta, B.C. - 143 pages

SECTION: 3. CLI RAW DATA REPORTS

DATE: OCT 83

PAGE: 3-17

SUB-SECTION: 3.3 DETAILED REPORT LIST

AUTHOR: CLM

REVISION: 3

Report
NumberDescription

R002270 WATERFOWL CAPABILITY BY WATERSHED DIVISION WITHIN PROVINCE

Waterfowl capability classes by subclasses are tabulated for each province by main watershed division. Both land and water areas are tabulated. The report is available for all provinces except Newfoundland.

Data source: 1:250,000 CLI maps; decomplexed class;

November 1979 to March 1980; Hectares; 81 pages

R002280 WATERFOWL CAPABILITY BY WATERSHED SUB-DIVISION WITHIN PROVINCE

Same as R002270 except reporting is at a more detailed watershed level. Both land and water areas are tabulated. The report is available for all provinces except Newfoundland in three sections.

Data source: 1:250,000 CLI maps; decomplexed class;

November 1979 to March 1980; Hectares;

P.E.I., N.S., N.B. - 21 pages

Quebec, Ontario - 75 pages

Man., Sask., Alta, B.C. - 167 pages

CLDS
LANDS DIRECTORATE
ENVIRONMENT CANADA

CLDS/CGIS
CATALOGUE
OF REPORTS

SECTION: 3. CLI RAW DATA REPORTS	DATE: OCT 83	PAGE: 2-18
SUB-SECTION: 3.3 DETAILED REPORT LIST	AUTHOR: CLM	REVISION: 3

<u>Report Number</u>	<u>Description</u>
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R002290	WATERFOWL CAPABILITY BY WATERSHED SUB-SUB-DIVISION WITHIN PROVINCE
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Same as R002280 but the watershed is further broken down into catchment areas of streams or stream systems at the tributary level. Both land and water areas are tabulated. The report is available for all provinces except Newfoundland in seven sections.

Data source: 1:250,000 CLI maps; decomplexed class; Hectares;

P.E.I., N.B., N.S.	November 1979 - 93 pages
Quebec	January 1980 - 110 pages
Ontario	November 1979 - 102 pages
Manitoba	February 1980 - 94 pages
Saskatchewan	March 1980 - 124 pages
Alberta	November 1979 - 149 pages
B.C.	March 1980 - 116 pages

R002300	UNGULATE CAPABILITY BY CENSUS DIVISION WITHIN PROVINCE
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Ungulate capability classes by subclasses are tabulated by 1976 census division within each province. Both land and water areas are tabulated. The report is available for all provinces except Newfoundland and Prince Edward Island in three sections.

Data source: 1:250,000 CLI maps; decomplexed class;

January 1980, B.C. February 1980; Hectares;

N.S., N.B.	- 48 pages
Quebec, Ontario	- 146 pages
Man., Sask., Alta, B.C.	- 153 pages

CLDS
LANDS DIRECTORATE
ENVIRONMENT CANADA

CLDS/CGIS
CATALOGUE
OF REPORTS

SECTION: 3. CLI RAW DATA REPORTS	DATE: OCT 83	PAGE: 3-19
SUB-SECTION: 3.3 DETAILED REPORT LIST	AUTHOR: CLM	REVISION: 3

Report
Number

Description

R002310 UNGULATE CAPABILITY BY ELECTORAL DISTRICT WITHIN PROVINCE

Ungulate capability classes by subclasses are tabulated by 1976 federal electoral district for each province. Both land and water areas are tabulated. The report is available for all provinces except Prince Edward Island in four sections.

Data source: 1:250,000 CLI maps; decomplexed class;

August 1979, Nfld. October 1979, Hectares;

Nfld, N.S., N.B. - 49 pages
Quebec - 78 pages
Ontario - 106 pages
Man., Sask., Alta, P.C. - 129 pages

R002320 UNGULATE CAPABILITY BY WATERSHED DIVISION WITHIN PROVINCE

Ungulate capability classes by subclasses are tabulated for each province by main watershed division. Both land and water areas are tabulated. The report is available for all provinces except Newfoundland and Prince Edward Island.

Data source: 1:250,000 CLI maps; decomplexed class;

November 1979; Hectares; 82 pages

CLDS
LANDS DIRECTORATE
ENVIRONMENT CANADA

CLDS/CGIS
CATALOGUE
OF REPORTS

SECTION: 3. CLI RAW DATA REPORTS

DATE: OCT 83

SUB-SECTION: 3.3 DETAILED REPORT LIST

AUTHOR: CLM

REVISION: 3

**Report
Number**

Description

R002330 UNGULATE CAPABILITY BY WATERSHED SUB-DIVISION WITHIN PROVINCE

Same as R002320 except that reporting is at a more detailed watershed level. Both land and water areas are tabulated. The report is available for all provinces except Newfoundland and Prince Edward Island in three sections.

Data source: 1:250,000 CLI maps; decomplexed class;

November 1979; Hectares;

N.S., N.B. - 21 pages
Quebec, Ontario - 68 pages
Man., Sask., Alta, B.C. - 135 pages

R002340 UNGULATE CAPABILITY BY WATERSHED SUB-SUB-DIVISION WITHIN PROVINCE

Same as R002330 but the watershed is further broken down into catchment areas of streams or streams at the tributary level. Both land and water areas are tabulated. The report is available for all provinces except Newfoundland and Prince Edward Island in seven sections.

Data source: 1:250,000 CLI maps; decomplexed class;

November 1979; Hectares;

N.S., N.B. - 69 pages
Quebec - 86 pages
Ontario - 117 pages
Manitoba - 73 pages
Saskatchewan - 102 pages
Alberta - 129 pages
B.C. - 127 pages

CLDS

LANDS DIRECTORATE
ENVIRONMENT CANADA

CLDS/CGIS CATALOGUE OF REPORTS

SECTION: 3. CLI RAW DATA REPORTS	DATE: OCT 83	PAGE: 3-21
SUB-SECTION: 3.3 DETAILED REPORT LIST	AUTHOR: CLM	REVISION: 3

Report
Number

Description

R002350 UNGULATE CAPABILITY BY ELECTORAL DISTRICT WITHIN PROVINCE

Same as R002310 but for land areas only. The report is available for all provinces except Prince Edward Island in four sections.

Data source: 1:250,000 CLI maps; decomplexed class;

November 1979; Hectares;

Nfld, N.S., N.B.	- 34 pages
Quebec	- 76 pages
Ontario	- 103 pages
Man., Sask., Alta, B.C.	- 127 pages

R002360 UNGULATE CAPABILITY AND SPECIES

This report tabulates decomplexed ungulate capability class by species indicator (see Appendix A). The province is broken down by electoral district. Both land and water areas are reported. The report is available only for Manitoba.

Data source: 1:250,000 CLI maps; decomplexed class;

October 1979; Acres; 14 pages

CLDS
LANDS DIRECTORATE
ENVIRONMENT CANADA

CLDS/CGIS
CATALOGUE
OF REPORTS

SECTION: 3. CLI RAW DATA REPORTS	DATE: OCT 83	PAGE: 3-22
SUB-SECTION: 3.3 DETAILED REPORT LIST	AUTHOR: CLM	REVISION: 3

<u>Report Number</u>	<u>Description</u>
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R002370 8 TO 161 KM CITY RADIUS 1965 LAND USE

Land use is tabulated by the following radii bands for each city: 0-8 km, 8-16, 16-24, 24-32, 32-40, 40-56, 56-80, 80-121, 121-161. The areas are tabulated 1 city per page in one report.

Data source: 1:250,000 CLI maps; decomplexed class;

January 1980; Hectares; Kilometers;

St. John's Nfld, St. John N.B., Halifax, Quebec, Chicoutimi, Montreal, Ottawa, Kitchener, Sudbury, St. Catherines, Hamilton, Windsor, London, Oshawa, Thunder Bay, Winnipeg, Regina, Saskatoon, Calgary, Edmonton - 20 pages.

R002380 FORESTRY CAPABILITY BY CENSUS DIVISION WITHIN PROVINCE

Forestry capability classes by subclasses are tabulated by 1976 census divisions within each province. This report is available for all provinces except Newfoundland and British Columbia in three sections.

Data source: 1:250,000 CLI maps; decomplexed class;

January 1981; Hectares;

P.E.I., N.S., N.B.	- 43 pages
Ontario, Quebec	- 135 pages
Man., Sask., Alta	- 69 pages

CLDS
LANDS DIRECTORATE
ENVIRONMENT CANADA

CLDS/CGIS
CATALOGUE
OF REPORTS

SECTION: 3. CLI RAW DATA REPORTS	DATE: OCT 83	3-23
SUB-SECTION: 3.3 DETAILED REPORT LIST	AUTHOR: CLM	REVISION: 3

Report
Number

Description

R002390 FORESTRY CAPABILITY BY ELECTORAL DISTRICT WITHIN PROVINCE

Forestry capability classes by subclasses are tabulated by 1976 federal electoral district within each province. This report is available for all provinces except Newfoundland and British Columbia in four sections.

Data source: 1:250,000 CLI maps; decomplexed class;

April 1981; Hectares;

P.E.I., N.S., N.B.	- 32 pages
Quebec	- 78 pages
Ontario	- 94 pages
Man., Sask., Alta	- 31 pages

R002400 FORESTRY CAPABILITY BY WATERSHED DIVISION WITHIN PROVINCE

Forestry capability classes by subclasses are tabulated for each province by main watershed division. This report is available for all provinces except Newfoundland and British Columbia.

Data source: 1:250,000 CLI maps; decomplexed class;

April 1981; Hectares; 45 pages

000039

CLDS
LANDS DIRECTORATE
ENVIRONMENT CANADA

CLDS/CGIS
CATALOGUE
OF REPORTS

SECTION: 3. CLI RAW DATA REPORTS	DATE: OCT 83	
SUB-SECTION: 3.3 DETAILED REPORT LIST	AUTHOR: CLM	REVISION: 3

Report
Number

Description

R002410 FORESTRY CAPABILITY BY WATERSHED SUB-DIVISION WITHIN PROVINCE

Same as R002400 except that reporting is at a more detailed watershed level. The report is available for all provinces except Newfoundland and British Columbia in three sections.

Data source: 1:250,000 CLI maps; decomplexed class;

January 1981; Hectares;

P.E.I., N.S., N.B.	- 21 pages
Ontario, Quebec	- 54 pages
Man., Sask., Alta	- 57 pages

R002420 FORESTRY CAPABILITY BY WATERSHED SUB-SUB-DIVISION WITHIN PROVINCE

Same as R002410 but further broken down into catchment areas of streams or stream systems at the tributary level. The report is available for all provinces except Newfoundland and British Columbia in four sections.

Data source: 1:250,000 CLI maps; decomplexed class;

January 1981; Hectares;

P.E.I., N.S., N.B.	- 94 pages
Quebec, Ontario	- 181 pages
Man., Sask.	- 123 pages
Alta	- 99 pages

Section 4**APPLICATION REPORTS BASED ON CLDS/CGIS DATA**

This section catalogues reports that were written about ongoing projects and studies. The authors and these reports have used CGIS to convert the stored data taken from maps into easily retrievable information. These reports are known as Application Reports and they describe previous, as well as current applications of CLDS and CGIS.

These reports show how CLDS and CGIS can be used to transform various types of data - ecological, thematic and statistical for example - into useful information - information that is necessary to efficiently:

- parcel land;
- map land;
- monitor land use; and,
- manage resources.

Each publication is assigned a report number. The publications are identified by:

- name;
- brief description;
- date of publication; and,
- number of pages.

Report numbers range from R003000 to R003999.

CLDS
LANDS DIRECTORATE
ENVIRONMENT CANADA

CLDS/CGIS
CATALOGUE
OF REPORTS

SECTION: 4. APPLICATION REPORTS		DATE: OCT 83	PAGE: 4-1
SUB-SECTION:		AUTHOR: CLM	REVISION: 3

<u>Report Number</u>	<u>Description</u>
R003030	A GEO-INFORMATION SYSTEM (CGIS) AND THE CADASTRE: A DEMONSTRATION PROJECT (Unpublished) Use of the CGIS to analyse thematic data and statistical data relating to land parcels is demonstrated. February 1977; 23 pages
R003040	THE USE OF A BIOPHYSICAL (ECOLOGICAL) DATA BASE FOR PARK PLANNING (Unpublished) The CGIS and the Interactive Graphics Subsystem (IGSS) as tools to create and analyse a data base of ecological data for Gros Morne National Park to aid in park planning. Two papers are included. November 1979, July 1981; 45 pages
R003050	CANADA LAND DATA SYSTEM - A COMPUTER SYSTEM FOR ENVIRONMENTAL BASELINE DATA (Unpublished) This is a demonstration of the CGIS Interactive Graphics Subsystem (IGSS) showing its capability to analyse ecological data. A series of hypothetical pipeline corridors were defined and their impact analysed using the ecological data. The data base, covering the Firth River area N.W.T., was created as part of a joint Parks Canada - Lands Directorate project. November 1979; 31 pages

CLDS
LANDS DIRECTORATE
ENVIRONMENT CANADA

CLDS/CGIS
CATALOGUE
OF REPORTS

SECTION: 4. APPLICATION REPORTS		DATE: OCT 83	PAGE: 4-2
SUB-SECTION:		AUTHOR: CLM	REVISION: 3

<u>Report Number</u>	<u>Description</u>
R003070	A DEMONSTRATION PREPARED FOR THE NORTHERN LAND USE MAPPING SERIES (Unpublished) Two interactive data bases created to illustrate the capability of the IGSS to present and analyse the Northern Land Use Mapping Series information are described. The first data base combines contour information with the Northern Land Use Mapping Series data for analysis. The second examines a hypothetical corridor routing. March 1979; 40 pages
R003080	CAPE BRETON BUDWORM GRAPHICS DATA BASE (Unpublished) An analysis of defoliation and related forest stand information over a three year time period is outlined. The data, covering the central part of Cape Breton Island, was collected by the Nova Scotia Department of lands and Forests. The IGSS was utilized to monitor the defoliation over time and to aid in determining which areas of forest should be cut each year. June 1979; 22 pages
R003100	CYPRESS HILLS PROVINCIAL PARK (Unpublished) A demonstration of the IGSS as a tool to aid in park planning. The data base was created for Cypress Hills Provincial Park in Alberta. March 1980; 18 pages

CLDS

LANDS DIRECTORATE ENVIRONMENT CANADA

CLDS/CGIS

CATALOGUE OF REPORTS

SECTION: 4. APPLICATION REPORTS		DATE: OCT 83	PAGE: 4-3
SUB-SECTION:		AUTHOR: CLM	REVISION: 3

Report Number	Description
RO03110	AN ANALYSIS OF LAND RESOURCES IN THE ANNAPOLIS VALLEY, NOVA SCOTIA (Unpublished) This paper illustrates how the CGIS and the Interactive Graphics Subsystem (IGSS) were used to analyse the resources of the Annapolis Valley. A comparison of the capabilities of the valley against the actual uses was performed. June 1980; 32 pages
RO03120	CGIS: A LAND USE PLANNING TOOL (Unpublished) An interactive data base covering the northern portion of Prince Edward Island containing land use, soils and tenure data is illustrated. The paper describes how the IGSS was used to query the data to aid land use planning. February 1980; 50 pages
RO03130	THE EDMUNSTON N.B. PLANNING REGION (Unpublished) This report was prepared at the request of the planners for this region to provide overview data based on CLI capability ratings and land use classifications. The report contains general statistics and maps describing the land resources of the region. The IGSS, using existing data in the CLDS data bank, was utilized to produce the report. February 1981; 53 pages

CLDS
LANDS DIRECTORATE
ENVIRONMENT CANADA

CLDS/CGIS
CATALOGUE
OF REPORTS

SECTION: 4. APPLICATION REPORTS		DATE: OCT 83	PAGE: 4-4
SUB-SECTION:		AUTHOR: CLM	REVISION: 3

Report Number	Description
R003140	TERRA NOVA NATIONAL PARK (Unpublished) A biophysical data base, for Terra Nova National Park in Newfoundland, was created for the Superintendent of the park to be used as a tool for the management of the park. The examples in this report deal with retrieving land systems, land districts, identifying areas of glacial overburden and areas with specific vegetation cover. January 1981; 36 pages
R003150	SASKATCHEWAN FOREST INVENTORY - PILOT STUDY DATA BASE (Unpublished) As part of their investigation of computer assisted mapping systems, the Saskatchewan Forestry Inventory has initiated a two phase study of the CLDS. This report describes the data base created in phase 1 and a number of typical analyses performed using the IGSS. See also R003160. May 1981; 38 pages
R003160	SASKATCHEWAN FOREST INVENTORY - SITE RANKING ANALYSIS (Unpublished) Several examples and the methodology used to perform site ranking from forest cover types utilizing the IGSS are presented. A further description of the data base and the pilot study is given in R003150. May 1981; 32 pages

SECTION: 4. APPLICATION REPORTS	DATE: OCT 83	PAGE: 4-5
SUB-SECTION:	AUTHOR CLM	REVISION 3

Report
Number

Description

R003170 LAND RESOURCES OF SOUTH EAST NEW BRUNSWICK (Unpublished)

This report was compiled as background material for a regional development plan. Land capability and land use are presented in a series of tables and plots. The report was produced using the IGSS.

September 1981; 60 pages

R003180 TOXIC CHEMICALS IN THE ENVIRONMENT (Unpublished)

This report describes a pilot project carried out on CLDS to demonstrate the feasibility of using this system to analyse, compare and manipulate the relevant information which will allow an assessment of the risk imposed by toxic chemicals in the environment.

June 1983; 38 pages



CLDS

LANDS DIRECTORATE ENVIRONMENT CANADA

CLDS/CGIS

CATALOGUE OF REPORTS

SECTION: APPENDIX A	DATE: OCT 83	PAGE: A-0
SUB-SECTION: CLASSES OF INFORMATION	AUTHOR: CLM	REVISION:

TABLE OF CONTENTS

SECTION		PAGE
A.1	HOW CLDS STORES LAND DATA	A-1
A.2	CLI REPORTING UNITS	A-1
A.2-1	Census Boundaries	A-2
A.2-2	Watershed Divisions	A-4
A.3	WAYS OF CODING AND RECORDING CLI DATA	A-6
A.3-1	Complexed/Decomplexed Data	A-6
A.3-2	Tabulation	A-6
A.3-3	Extra Input Codes	A-7
A.4	CANADA LAND INVENTORY DATA	A-8
A.4-1	Land Capability Classification for <u>Recreation</u>	A-9
A.4-2	Soils Capability Classification for <u>Agriculture</u>	A-14
A.4-3	Classification for Present <u>Land Use</u>	A-18
A.4-4	Land Capability Classification for <u>Forestry</u>	A-21
A.4-5	Land Capability Classification for <u>Waterfowl</u>	A-26
A.4-6	Land Capability Classification for <u>Ungulates</u>	A-30
A.5	LANDS DIRECTORATE OFFICES	A-34

CLDS
LANDS DIRECTORATE
ENVIRONMENT CANADA

CLDS/CGIS
CATALOGUE
OF REPORTS

SECTION: A. CLASSES OF INFORMATION	DATE: OCT 83	PAGE: A-1
SUB-SECTION: A.1 How CLDS Stores Land Data	AUTHOR: CLM	REVISION: 3

A.1 HOW CLDS STORES LAND DATA

The Canada Land Data System (CLDS) provides a computer system, the Canada Geographic Information System (CGIS) to enable users to transfer data drawn on maps into a data bank.

The user assigns a description or classification code to each area or point on the map, and the system automatically associates these codes with the position, size and shape of the area.

Each user can, therefore, have CLDS create his own data bank.

The system can use the stored information to draw maps. The user specifies the category or categories desired, and the outside boundaries of the map. The system then draws the areas associated with those categories within the boundaries specified. Depending on the equipment the user has available, these maps can be displayed on a graphics terminal or drawn on paper, in black and white or in color.

Map information can also be displayed or printed in tabular form.

CLDS

LANDS DIRECTORATE
ENVIRONMENT CANADA

CLDS/CGIS CATALOGUE OF REPORTS

SECTION: A. CLASSES OF INFORMATION	DATE: OCT 83	PAGE: A-2
SUB-SECTION: A.2 CLI Reporting Units	AUTHOR: CLM	REVISION: 3

A.2 CLI REPORTING UNITS

Currently, the CLI data is reported in two ways: by census boundary or by watershed division. Census boundaries are those specified in the Statistics Canada Catalogue 99-813. Watershed divisions correspond to those defined by the Inland Waters Directorate of Environment Canada. The CGIS system can generate reports by census boundary or by watershed division.

CLDS

LANDS DIRECTORATE ENVIRONMENT CANADA

CLDS/CGIS

CATALOGUE OF REPORTS

SECTION: A. CLASSES OF INFORMATION	DATE: OCT 83	PAGE: 1-3
SUB-SECTION: A.2 CLI Reporting Units	AUTHOR: CLM	REVISION: 3

A.2.1 CENSUS BOUNDARIES

The following definitions were abstracted from the Statistics Canada Catalogue 93-813, "Census Reference List". Further information may be obtained from Statistics Canada.

Enumeration Area (EA)

The enumeration area is the basic geographic unit of census data collection.

It is the spatial unit canvassed by one Census Representative and is defined according to the following criteria:

- 1) Population - an EA area may include as many as 375 households, depending on its location;
- 2) Number of farms - an EA area always include fewer than 100 farms;
- 3) Limits - an EA area, being the building-block of all geo-statistical areas, never cuts across any area recognized by the census. Enumeration areas are normally the smallest geographic units for which census data are available.

Electoral District (ED)

Any territorial unit entitled to return a member to serve in the House of Commons. There are 264 ED's in Canada each of which comprises a certain number of EA's.

Census Division (CD)

General term applying to countries, regional districts, regional municipalities, etc. In Newfoundland, Manitoba, Saskatchewan and Alberta, the term describes geo-statistical areas that have been created by Statistics Canada in co-operation with the province as an equivalent for counties.

Index maps of enumeration area, census division and electoral district boundaries are available from the Canada Map Office, Department of Energy, Mines and Resources, 615 Booth Street, Ottawa, Ontario, K1A 0E9.

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CLDS/CGIS CATALOGUE OF REPORTS

SECTION: A. CLASSES OF INFORMATION	DATE: OCT 83	PAGE: A-4
SUB-SECTION: A.2 CLI Reporting Units	AUTHOR: CLM	REVISION: 3

A.2.2 WATERSHED DIVISIONS

The watershed divisions utilized in this report series correspond to those defined by the Inland Waters Directorate, Environment Canada. The watershed code is made up of 3 units or divisions.

05 = division
B = sub-division
D = sub-sub-division

DIVISION

The division represents a principal drainage division; there are 11 in total. These principal drainage divisions usually refer to river basins of significant size such as the Churchill River basin. Small independent streams and their catchment as well as small areas without defined drainage may be included within the boundaries of the principal watersheds.

SUBDIVISION

Subdivisions divide the main divisions following heights of land within the divisions. A letter (A-Z) is assigned to each subdivision.

SUBSUBDIVISION

Sub-subdivisions (A-Z) provide another order of breakdown which may identify the catchment area of any stream or stream system at any tributary level. Areas covered by these divisions range from approximately 1,000 to 10,000 square miles. Codes are assigned in an upstream to downstream order within a subdivision.

CLDS
LANDS DIRECTORATE
ENVIRONMENT CANADA

CLDS/CGIS
CATALOGUE
OF REPORTS

SECTION: A. CLASSES OF INFORMATION	DATE: OCT 83	PAGE: A-5
SUB-SECTION: A.2 CLI Reporting Units	AUTHOR: CLM	REVISION: 3

WATERSHED UNITS

These divisions are sub-divided once more into watershed units. Standards reports by province are not generated by watershed units due to the large volume of data. These tabulations are generated by CLDS on a cost recovery basis.

Index maps of watershed divisions are available in the "Reference Index - Hydrometric Map Supplement", Canada 1977, obtained from the Water Resources Branch, Environment Canada, Ottawa, Ontario, K1A 0E7.

CLDS

LANDS DIRECTORATE ENVIRONMENT CANADA

CLDS/CGIS

CATALOGUE OF REPORTS

SECTION: A. CLASSES OF INFORMATION	DATE: OCT 83	PAGE: A-6
SUB-SECTION: A.3 Ways of Coding CLI Data	AUTHOR: CLM	REVISION: 3

A.3.1 COMPLEXED/DECOMPLEXED DATA

Most of the Canada Land Inventory capability data at the 1:250,000 map scale is represented by a COMPLEX symbol. Cartographic and survey limitations require that extremely small units be grouped or complexed into larger units. In most cases, the complex is a natural one since the land unit is a mixture of two or more components so intermixed that mapping each sub-unit is impractical. In complexing the data an estimate of the area of each class was made, to the nearest 10%. The greatest amount is the PRIMARY CLASS and is shown first on the map, followed by any others in descending order.

Thus an area might be classified as:

2⁵4³5²

A.3.2 Tabulation

To prepare summary tabulations it is necessary to DECOMPLEX or prorate the classification. An area which contained 100 hectares of the above class would be tallied as:

50 hectares of class	2
30 hectares of class	4
20 hectares of class	5

If a tabulation does not specify that the data was decomplexed then only the PRIMARY CLASS was considered for each unit. The total area for the unit is allocated to the primary class.

CLDS
LANDS DIRECTORATE
ENVIRONMENT CANADA

CLDS/CGIS
CATALOGUE
OF REPORTS

SECTION: A. CLASSES OF INFORMATION	DATE: OCT 83	PAGE: 4-7
SUB-SECTION: A.3 NOTES ON CLI TABULATIONS	AUTHOR: CLM	REVISION: 3

A.3.3 EXTRA INPUT CODES

The tabulations contain classification codes which are to found on the CLI maps. These codes have been added for the computer input of the maps. When using the tabulations the reader should be aware that these codes may be included in the totals. The codes are:

class = 8	subclass = blank	- unmapped area
	Z	- water area
	T	- forest reserve
	O	- national park
	B	- urban area
	W	- provincial park
class = Z		- water area

Unless otherwise noted, the data contained in this series of tabulations was generated from the 1:250,000 scale CLI maps contained in the CLDS data bank.

CLDS

LANDS DIRECTORATE
ENVIRONMENT CANADA

CLDS/CGIS CATALOGUE OF REPORTS

SECTION: A. CLASSES OF INFORMATION	DATE OCT 83	PAGE: A-8
SUB-SECTION: A.4 Canada Land Inventory Data	AUTHOR: CLM	REVISION: 3

A.4 CANADA LAND INVENTORY DATA

Currently, the CLDS data base contains CLI data that is classified into 6 categories:

- land capability for recreation,
- soil capability for agricultural,
- according to (present) land use,
- land capability for forestry,
- according to capability to support waterfowl,
- according to capability to support ungulates.

Each category is further subdivided into classes and subclasses.

CLDS
LANDS DIRECTORATE
ENVIRONMENT CANADA

CLDS/CGIS
CATALOGUE
OF REPORTS

SECTION: A. CANADA LAND INVENTORY DATA	DATE: OCT 83	PAGE: A-9
SUB-SECTION: A.4 RECREATION	AUTHOR: CLM	REVISION: 3

A.4.1 Land Capability Classification for Recreation¹

Seven classes of land are differentiated on the basis of the intensity of outdoor recreational use, or the quantity of outdoor recreation which may be generated and sustained per unit area of land per annum under perfect market conditions.

"Quantity" may be measured by visitor days, a visitor day being any reasonable portion of a 24 hour period during which an individual person uses a unit of land for recreation.

"Perfect market conditions" implies uniform demand and accessibility for all areas, which means that location relative to population centres and to present access do not affect the classification.

"Intensive and dispersed activities" are recognized. "Intensive activities" are those in which relatively large numbers of people may be accommodated per unit area, while "dispersed activities" are those which normally require a relatively larger area per person.

Important factors affecting the classification are:

- The purpose of the inventory is to provide a reliable assessment of the quality, quantity and distribution of the natural recreation resources within the settled parts of Canada.
- The inventory is essentially reconnaissance in nature, based on the interpretation of aerial photographs, field checks and available records. The finished maps should be interpreted accordingly.
- The inventory classification is designed in accordance with present popular preferences in non-urban outdoor recreation. Urban areas (generally over 1,000 population with permanent urban character), as well as some non-urban industrial areas, are not classified.
- Land is ranked according to its natural capability under existing conditions, whether in natural or modified state. But no assumptions are made concerning its capability if it is given further major artificial modifications.

¹ For more information refer to "Land Capability for Recreation Summary Report" Report No. 14 1978 Lands Directorate, Environment Canada.

CLDS
LANDS DIRECTORATE
ENVIRONMENT CANADA

CLDS/CGIS
CATALOGUE
OF REPORTS

SECTION: A. CANADA LAND INVENTORY DATA	DATE: OCT 83	PAGE: A-10
SUB-SECTION: A.4 RECREATION	AUTHOR: CLM	REVISION: 3

- Sound recreation land management and development practices are assumed for all areas in practical relation to the natural capability of each area.
- Water bodies are not directly classified. Their recreational values accrue to the adjoining shoreland or land unit.
- Opportunities for recreation afforded by the presence in an area of wildlife and sports fish are indicated in instances where reliable information was available. But the ranking does not reflect the biological productivity of the area; wildlife capability is indicated in a companion series of maps.

CLASSES

- 1 - LANDS IN THIS CLASS HAVE VERY HIGH CAPABILITY FOR OUTDOOR RECREATION

Class 1 lands have natural capability to engender and sustain very high annual use based on one or more recreational activities of an intensive nature. Class 1 land units should be able to generate and sustain a level of use comparable to that evident at an outstanding and large bathing beach or a nationally known ski slope.

- 2 - LANDS IN THIS CLASS HAVE A HIGH CAPABILITY FOR OUTDOOR RECREATION

Class 2 lands have natural capability to engender and sustain high annual use based on one or more recreational activities of an intensive nature.

- 3 - LANDS IN THIS CLASS HAVE A MODERATELY HIGH CAPABILITY FOR OUTDOOR RECREATION

Class 3 lands have natural capability to engender and sustain moderately high annual use land usually on intensive or moderately intensive activities.

- 4 - LANDS IN THIS CLASS HAVE MODERATE CAPABILITY FOR OUTDOOR RECREATION

Class 4 lands have natural capability to engender and sustain moderate annual use based usually on dispersed activities.

CLDS
LANDS DIRECTORATE
ENVIRONMENT CANADA

CLDS/CGIS
CATALOGUE
OF REPORTS

SECTION: A. CANADA LAND INVENTORY DATA	DATE: OCT 83	PAGE: A-11
SUB-SECTION: A.4 RECREATION	AUTHOR: CLM	REVISION: 3

- 5 - LANDS IN THIS CLASS HAVE MODERATELY LOW CAPABILITY FOR OUTDOOR RECREATION

Class 5 lands have natural capability to engender and sustain a moderately low total annual use based on dispersed activities.

- 6 - LAND IN THIS CLASS HAVE LOW CAPABILITY FOR OUTDOOR RECREATION

Class 6 lands lack the natural quality and significant features to rate higher, but have the natural capability to engender and sustain low annual use based on dispersed activities.

- 7 - LANDS IN THIS CLASS HAVE VERY LOW CAPABILITY FOR OUTDOOR RECREATION

Class 7 lands have practically no capability for any popular types of recreation activity, but there may be some capability for very specialized activities with recreation aspects or they may simply provide open space.

SUBCLASSES

Subclasses indicate the kinds of features which provide opportunity for recreation. They are, therefore, positive aspects of land and do not indicate limitations to use. Features may be omitted from a unit, either because of the imposed three-feature limit, or because their presence was unknown or unconfirmed.

The degree to which these features are judged capable, collectively of generating and sustaining use for recreation determines the class. The sequence in which they are listed indicates the order of their significance. Subordinate features may be relatively insignificant and the class of a unit should not be interpreted to indicate the capability of a second or third use.

The subclasses are:

- A - Land providing access to water affording opportunity for angling or viewing of sports fish;
- B - Shoreland capable of supporting family beach activities. In high class units this includes family bathing. In Classes 4 and 5, the activities may preclude bathing due to water temperature or other limitations;

CLDS
LANDS DIRECTORATE
ENVIRONMENT CANADA

CLDS/CGIS
CATALOGUE
OF REPORTS

SECTION: A. CANADA LAND INVENTORY DATA	DATE OCT 83	PAGE: A-12
SUB-SECTION: A.4 RECREATION	AUTHOR: CLM	REVISION 3

- C - Land fronting on and providing direct access to waterways with significant capability for canoe tripping;
- D - Shoreland with deeper inshore water suitable for swimming, or boat mooring, or launching;
- E - Land with vegetation possessing recreational value;
- F - Waterfall or rapids;
- G - Significant glacier view or similar experience;
- H - Historic or pre-historic site;
- J - Area offering particular opportunities for gathering and collecting items of popular interests;
- K - Shoreland or upland suited to organized camping. This subclass is usually associated with other features;
- L - Interesting landform features other than rock formations;
- M - Frequent small water bodies, or continuous streams occurring in upland areas;
- N - Land (usually shoreland) suited to family or other recreation lodging use;
- O - Land which affords an opportunity for viewing of upland wildlife;
- P - Areas exhibiting cultural landscape patterns of agricultural, industrial or social interest;
- Q - Areas exhibiting variety, in topography or land and water relationships, which enhances opportunities for general outdoor recreation such as hiking and nature study or appreciation for aesthetics of the area;
- R - Interesting rock formations;
- S - A combination of slopes, snow conditions and climate providing downhill skiing opportunities;

CLDS
LANDS DIRECTORATE
ENVIRONMENT CANADA

CLDS/CGIS
CATALOGUE
OF REPORTS

SECTION: A. CANADA LAND INVENTORY DATA	DATE: OCT 83	PAGE: A-13
SUB-SECTION: A.4 RECREATION	AUTHOR: CLM	REVISION: 3

- T - Thermal springs;
- U - Shoreland fronting water accomodating yachting or deep water boat tripping;
- V - A vantage point or area which offers a superior view relative to the class of the unit(s) which contain it, or a corridor or other area which provides frequent viewing opportunities;
- W - Land affording opportunity for viewing of wetland wildlife;
- X - Miscellaneous features with recreation capability;
- Y - Shoreland providing access to water suitable for popular forms of family boating;
- Z - Areas exhibiting major, permanent, non-urban man-made structures of recreational interest.

CLDS
LANDS DIRECTORATE
ENVIRONMENT CANADA

CLDS/CGIS
CATALOGUE
OF REPORTS

SECTION: A. CANADA LAND INVENTORY DATA	DATE: OCT 83	PAGE: A-14
SUB-SECTION: A.4 AGRICULTURE	AUTHOR: CLM	REVISION: 3

A.4.2 Soil Capability Classification for Agriculture¹

In the CLI classification system of soil capability for agriculture, mineral soils are grouped into seven classes according to their potential and limitations for agricultural use. The most highly rated soils, those having no significant limitations for cropping, are designated Class 1. Soils with no agricultural potential are designated Class 7. Soils designated Classes 2 to 6 indicate, in declining order, capability for agriculture. A series of subclasses designate the specific nature of limitations inherent in each soil class. For organic soils, a separate category (0) was established. Summary descriptions of each agricultural capability class and subclass follow:

Classes

- 1 - SOILS IN THIS CLASS HAVE NO SIGNIFICANT LIMITATIONS IN USE FOR CROPS

The soils are deep, are well to imperfectly drained, hold moisture well, and in the virgin state are well supplied with plant nutrients. They can be managed and cropped without difficulty. Under good management they are moderately high to high in productivity for a wide range of field crops.

- 2 - SOILS IN THIS CLASS HAVE MODERATE LIMITATIONS THAT RESTRICT THE RANGE OF CROPS OR REQUIRE MODERATE CONSERVATION PRACTICES

The soils are deep and hold moisture well. The limitations are moderate and the soils can be managed and cropped with little difficulty. Under good management they are moderately high to high in productivity for a fairly wide range of crops.

- 3 - SOILS IN THIS CLASS HAVE MODERATELY SEVERE LIMITATIONS THAT RESTRICT THE RANGE OF CROPS OR REQUIRE SPECIAL CONSERVATION PRACTICES

The limitations are more severe than for Class 2 soils. They affect one or more of the following practices: timing and ease of tillage; planting and harvesting; choice of crops; and methods of conservation. Under good management they are fair to moderately high in productivity for a fair range of crops.

1 Abstracted from CLI Report No. 2 - "Soil Capability Classification for Agriculture" 1972 Lands Directorate, Environment Canada

CLDS
LANDS DIRECTORATE
ENVIRONMENT CANADA

CLDS/CGIS
CATALOGUE
OF REPORTS

SECTION: A. CANADA LAND INVENTORY DATA	DATE: OCT 83	PAGE: A-15
SUB-SECTION: A.4 AGRICULTURE	AUTHOR: CLM	REVISION: 3

- 4 - SOILS IN THIS CLASS HAVE SEVERE LIMITATIONS THAT RESTRICT THE RANGE OF CROPS OR REQUIRE SPECIAL CONSERVATION PRACTICES, OR BOTH

The limitations seriously affect one or more of the following practices: timing and ease of tillage; planting and harvesting; choice of crops; and methods of conservation. The soils are low to fair in productivity for a fair range of crops but may have high productivity for a specially adapted crop.

- 5 - SOILS IN THIS CLASS HAVE VERY SEVERE LIMITATIONS THAT RESTRICT THEIR CAPABILITY TO PRODUCING PERENNIAL FORAGE CROPS, AND IMPROVEMENT PRACTICES ARE FEASIBLE

The limitations are so severe that the soils are not capable of use for sustained production of annual field crops. The soils are capable of producing native or tame species of perennial forage plants, and may be improved by use of farm machinery.

- 6 - SOILS IN THIS CLASS ARE CAPABLE ONLY OF PRODUCING PERENNIAL FORAGE CROPS AND IMPROVEMENT PRACTICES ARE NOT FEASIBLE

The soils provide some sustained grazing for farm animals, but the limitations are so severe that improvement by use of farm machinery is impractical. The terrain may be unsuitable for use of farm machinery, or the soils may not respond to improvement, or the grazing season may be very short.

- 7 - SOILS IN THIS CLASS HAVE NO CAPABILITY FOR ARABLE CULTURE OR PERMANENT PASTURE

This class also includes rockland, other non-soil areas, and bodies of water too small to show on the maps.

- 0 - ORGANIC SOILS

These soils are not placed in capability classes.

CLDS
LANDS DIRECTORATE
ENVIRONMENT CANADA

CLDS/CGIS
CATALOGUE
OF REPORTS

SECTION: A. CANADA LAND INVENTORY DATA	DATE OCT 83	PAGE: A-16
SUB-SECTION A.4 AGRICULTURE	AUTHOR CLM	REVISION 3

SUBCLASSES

Subclasses are used to describe the types of limitations which restrict the potential of the soils. The nine subclasses used in the soil capability classification for agriculture are:

- C - Adverse climate - The main limitation is low temperature or low or poor distribution of rainfall during the cropping season, or a combination of these;
- D - Undesirable soil structure and/or low permeability - The soils are difficult to till, absorb water slowly or the depth of the rooting zone is restricted;
- E - Erosion damage - Past damage from erosion limits agricultural use of the land;
- F - Fertility - Low natural fertility due to lack of available nutrients, high acidity or alkalinity, low exchange capacity, high levels of calcium carbonate or presence of toxic compounds;
- G - Inundation - Flooding by streams or lakes limits agricultural uses of the land;
- H - Moisture - A low moisture holding capacity, caused by adverse inherent soil characteristics, limits crop growth (not to be confused with climatic drought);
- N - Salinity - The soils are adversely affected by soluble salts;
- P - Stoniness - Stones interfere with tillage, planting, and harvesting;
- R - Shallowness to solid bedrock - Solid bedrock is less than three feet from the surface;
- S - Adverse soil characteristics - Adverse characteristics include one or more of the following: undesirable structure, low permeability, a restricted rooting zone because of soil characteristics, low natural fertility, low moisture-holding capacity, salinity;

CLDS

LANDS DIRECTORATE
ENVIRONMENT CANADA

CLDS/CGIS CATALOGUE OF REPORTS

SECTION: A. CANADA LAND INVENTORY DATA	DATE OCT 83	PAGE: A-17
SUB-SECTION: A.4 AGRICULTURE	AUTHOR CLM	REVISION 3

- T - Adverse topography - Either steepness or the pattern of slopes limits agricultural use;
- W - Excess water - Excess water other than from flooding limits use for agriculture. The excess water may be due to poor drainage, a high water table, seepage or runoff from surrounding areas;
- X - Soils having a moderate limitation caused by the cumulative effect of two or more adverse characteristics which singly are not serious enough to affect the class rating.

CLDS

LANDS DIRECTORATE

ENVIRONMENT CANADA

CLDS/CGIS

CATALOGUE

OF REPORTS

SECTION: A. CANADA LAND INVENTORY DATA	DATE OCT 83	PAGE A-18
SUB-SECTION: A.4 LAND USE	AUTHOR CLM	REVISION 3

A.4.3 Classification for Present Land Use¹

Category

Symbol

I URBAN

Land use for urban and associated non-agricultural purposes.

1. Built-up Area (Parks and other open spaces within built-up areas are included.) B
2. Mines, Quarries, Sand and Gravel Pits (Land used for the removal of earth materials.) E
3. Outdoor Recreation (Golf courses, parks, beaches, summer cottage areas, game preserves and historical sites.) O

II AGRICULTURAL LANDS

1. Horticulture, Poultry and Fur Operations Land use for intensive cultivation of vegetables and small fruits including market gardens, nurseries, flower and bulb farms, and sod farms. Large scale commercial fur and poultry farms are also included because of their specialized agriculture nature. H
2. Orchards and Vineyards, Land use for the production of tree fruits, hops and grapes. G
3. Cropland Land used for annual field crops: grains, oilseeds, sugar beets, tobacco, potatoes, field vegetables, associated fallow, and land being cleared for field crops. A

1. For further information refer to "A Guide to the Classification of Land Use for the Canada Land Inventory" 1968 Lands Directorate, Environment Canada.

CLDS
LANDS DIRECTORATE
ENVIRONMENT CANADA

CLDS/CGIS
CATALOGUE
OF REPORTS

SECTION: A. CANADA LAND INVENTORY DATA	DATE OCT 83	PAGE: A-19
SUB-SECTION: A.4 LAND USE	AUTHOR CLM	REVISION 3

Category

Symbol

4. Improved Pasture and Forage Crops Land use for improved pasture or for the production of hay and other cultivated fodder crops including land being cleared for these purposes. P
5. Rough Grazing and Rangeland K
 - (a) Areas of natural grasslands, sedges, herbaceous plants and abandoned farmland whether used for grazing or not. Bushes and trees may cover up to 25 per cent of the area. If in use, intermittently-wet hay lands (sloughs or meadows) are included.
 - (b) Woodland grazing: If the area is actively grazed and no other use dominates, in some grassy, open woodlands, bushes and trees may somewhat exceed 25 per cent cover.

III WOODLAND

Land covered with tree, scrub or bush growth, including:

1. Productive Woodland Wooded land with trees having over 25 per cent canopy cover and over approximately 20 feet in height. Plantations and artificially reforested areas are included regardless of age. T
2. Non-Productive Woodland land with trees or bushes exceeding 25 per cent Crown cover, and shorter than approximately 20 feet in height. Much cut-over and burned-over land is included. U

CLDS

LANDS DIRECTORATE
ENVIRONMENT CANADA

CLDS/CGIS CATALOGUE OF REPORTS

SECTION: A. CANADA LAND INVENTORY DATA	DATE OCT 83	PAGE: A-20
SUB-SECTION: A.4 LAND USE	AUTHOR CLM	REVISION 3

Category

Symbol

IV WETLAND

Swam, Marsh or Bog Open wetlands, except those which frequently dry up, and show evidence of grazing or hay cutting. (See K Agricultural Lands.)

M

V UNPRODUCTIVE LAND

Land which does not, and will not, support vegetation.
e.g. Eroded soil or rock and active depositional features.

1. Sand (Sand bars, sand flats, dunes, beaches.)

S

2. Rock and Other Unvegetated Surfaces (Rock barrens, badlands, alkali flats, gravel bars, eroded river banks, mine dumps.)

L

VI WATER

Z

CLDS
LANDS DIRECTORATE
ENVIRONMENT CANADA

CLDS/CGIS
CATALOGUE
OF REPORTS

SECTION: A. CANADA LAND INVENTORY DATA	DATE: OCT 83	PAGE: A-21
SUB-SECTION: A.4 FORESTRY	AUTHOR: CLM	REVISION: 3

A.4.4 Land Capability Classification for Forestry¹

In this classification all mineral and organic soils are grouped into one of seven classes based upon their inherent ability to grow commercial timber. The best lands of Canada for commercial tree growth will be found in Class 1; those in Class 7 cannot be expected to yield timber in commercial quantities; these classes represent the extremes. Because of unsuitable climate no Class 1 lands will be found in several regions of Canada, and in certain regions the Class 2 areas will be too small to show at the chosen scales of mapping.

Important factors on which classification is based are:

- All known or inferred information about the unit including subsoil, soil profile, depth, moisture, fertility, landform, climate and vegetation.
- A productivity range associated with each capability class based on the mean annual increment of the best species, or group of species, adapted to the site at, or near, rotation age. Productivity classes are expressed in gross merchantable cubic foot volume to a minimum diameter of four inches. Thinnings, bark, and branch wood are not included. The productivity as expressed is that of "normal", i.e., fully-stocked stands. It may be assumed that only good management would have produced stands of this nature.
- The following factors are not considered: location, access, distance to markets, size of units, ownership, present state or special crops such as Christmas trees.

The classes are based on the natural state of the land without improvements such as fertilization, drainage or amelioration practices. It is realized that in some instances productivity may change with improved forest management to the degree that limitations shown in the symbol may alter and/or class changes may take place. However, significant changes will only be achieved through costly and continuing practices.

¹ For more information refer to "Land Capability Classification for Forestry" Report No. 4 1970 Lands Directorate, Environment Canada.

CLDS
LANDS DIRECTORATE
ENVIRONMENT CANADA

CLDS/CGIS
CATALOGUE
OF REPORTS

SECTION A. CANADA LAND INVENTORY DATA	DATE OCT 85	PAGE A-22
SUB-SECTION A.4 FORESTRY	AUTHOR CLM	REVISION 3

CLASSES

1 - LANDS HAVING NO IMPORTANT LIMITATIONS TO THE GROWTH OF COMMERCIAL FORESTS

Soils are deep, permeable, of medium texture, moderately well-drained to imperfectly drained. They have good water-holding capacity and are naturally high in fertility. Their topographic position is such that they frequently receive seepage and nutrients from adjacent areas. They are not subject to extremes of temperature or evapotranspiration. Productivity will usually be greater than 111 cubic feet per acre per year. When required this class may be subdivided on the basis of productivity into Classes 1 (111 to 130), 1a (131 to 150), 1b (151 to 170), 1c (171 to 190), 1d (191 to 210), and by 20 cubic foot classes thereafter, as necessary.

2 - LANDS HAVING SLIGHT LIMITATIONS TO THE GROWTH OF COMMERCIAL FORESTS

Soils are deep, well-drained to moderately well-drained, of medium to fine texture and have good water-holding capacity. The most common limitations (all of a relatively slight nature) are: adverse climate, soil moisture deficiency, restricted rooting depth, somewhat low fertility, and the cumulative effects of several minor adverse soil characteristics. Productivity will usually be from 90 to 110 cubic feet per acre per year.

3 - LANDS HAVING MODERATE LIMITATIONS TO THE GROWTH OF COMMERCIAL FORESTS

Soils may be deep to somewhat shallow, well to imperfectly drained, of medium to fine texture with moderate to good water-holding capacity. They may be slightly low in fertility or suffer from periodic moisture imbalances. The most common limitations are: adverse climate, restricted rooting depth, moderate deficiency or excess of soil moisture, somewhat low fertility, impeded soil drainage, exposure (in maritime areas) and occasional inundation. Productivity will usually be from 71 to 90 cubic feet per acre per year.

CLDS
LANDS DIRECTORATE
ENVIRONMENT CANADA

CLDS/CGIS
CATALOGUE
OF REPORTS

SECTION: A. CANADA LAND INVENTORY DATA	DATE OCT 83	PAGE: 1-2
SUB-SECTION A.4 FORESTRY	AUTHOR: CLM	REVISION 3

4 - LANDS HAVING MODERATELY SEVERE LIMITATIONS TO THE GROWTH OF COMMERCIAL FORESTS

Soils may vary from deep to moderately shallow, from excessive through imperfect to poor drainage, from coarse to fine texture, from good to poor moisture holding capacity, from good to poor structure and from good to low natural fertility. The most common limitations are: moisture deficiency or excess, adverse climate, restricted rooting depth, poor structure, excessible carbonates, exposure, or low fertility. Productivity will usually be from 51 to 70 cubic feet per acre per year.

5 - LANDS HAVING SEVERE LIMITATIONS TO THE GROWTH OF COMMERCIAL FORESTS

Soils are frequently shallow to bedrock, stoney, excessively or poorly drained, of coarse or fine texture. They may have poor moisture holding capacity and be low in natural fertility. The most common limitations (often in combination) are: moisture deficiency or excess, shallowness to bedrock, adverse regional or local climate, low natural fertility, exposure particularly in maritime areas, excessive stoniness and high levels of carbonates. Productivity will usually be from 31 to 50 cubic feet per acre per year.

6 - LANDS HAVING SEVERE LIMITATIONS TO THE GROWTH OF COMMERCIAL FORESTS

The mineral soils are frequently shallow, stoney, excessively drained, of coarse texture and low in fertility. A large percentage of the land in this class is composed of poorly drained organic soils. The most common limitations (frequently in combination) are: shallowness to bedrock, deficiency or excess of soil moisture, high levels of soluble salts, low natural fertility, exposure, inundation and stoniness. Productivity will usually be from 11 to 30 cubic feet per acre per year.

CLDS

LANDS DIRECTORATE
ENVIRONMENT CANADA

CLDS/CGIS CATALOGUE OF REPORTS

SECTION: A. CANADA LAND INVENTORY DATA	DATE OCT 83	PAGE: A-24
SUB-SECTION: A.4 FORESTRY	AUTHOR CLM	REVISION 3

7 - LAND HAVING SEVERE LIMITATIONS WHICH PRECLUDE THE GROWTH OF COMMERCIAL FORESTS

Mineral soils are usually extremely shallow to bedrock, subject to regular flooding, or contain toxic levels of soluble salts. Actively eroding or extremely dry soils may also be placed in this class. A large percentage of the land is very poorly drained organic soils. The most common limitations are: shallowness to bedrock, excessive soil moisture, frequent inundation, active erosion, toxic levels of soluble salts, and extremes of climate or exposure. Productivity will usually be less than 10 cubic feet per acre per year.

SUBCLASSES

Except for Class 1, subclasses indicate the kind of limitation for each class. The subclasses are as follows:

Climate - Denotes a significant adverse departure from what is considered the median climate of the region, that is, a limitation as a result of local climate. Adverse regional climate is expressed by the class level.

A - Droughty or arid conditions as a result of climate;

C - A combination of more than one climatic factor, or when it is not possible to decide which of two or more features of climate is significant;

L - Low temperatures, that is too cold;

E - Exposure.

Soil Moisture - Denotes a soil moisture condition less than optimum for the growth of commercial forests, but not including inundation.

M - Soil moisture deficiency;

W - Soil moisture excess;

X - A pattern of "M" and "W" too intimately associated to map separately.

CLDS

LANDS DIRECTORATE ENVIRONMENT CANADA

CLDS/CGIS

CATALOGUE OF REPORTS

SECTION: A. CANADA LAND INVENTORY DATA	DATE: OCT 83	PAGE: A-25
SUB-SECTION: A.4 FORESTRY	AUTHOR: CLM	REVISION 3

Permeability and Depth of Rooting Zone - Denotes limitations of soil permeability of physical limitation to rooting depth.

D - Physical restriction to rooting by dense or consolidated layers, other than bedrock;

R - Restriction of rooting zone by bedrock;

Y - Intimate pattern of shallowness and compaction or other restricting layers.

Other Soil Factors - Denote factors of the soil which, individually or in combination, adversely affect growth.

E - Actively eroding soils;

F - Low fertility;

I - Soils periodically inundated by streams or lakes;

L - Excessive levels of calcium;

N - Excessive levels of toxic elements such as soluble salts;

P - Stoniness which affects forest density or growth;

S - A combination of soil factors, none of which by themselves would affect the class level but cumulatively lower the capability class.

TREE SPECIES INDICATORS

The species which can be expected to yield the volume associated with each class are shown as part of the symbol. Only indigenous species adapted to the region and land are shown. Where only one species indicator is shown in a complex, it applies to all classes.

Examples of species symbols are:

pP		Ponderosa Pine
aLF		Alpine Fir
lP		Lodgepole Pine
D		Douglas Fir
eS		Engelmann Spruce

CLDS
LANDS DIRECTORATE
ENVIRONMENT CANADA

CLDS/CGIS
CATALOGUE
OF REPORTS

SECTION: A. CANADA LAND INVENTORY DATA	DATE: OCT 83	PAGE: A-26
SUB-SECTION: A.4 WATERFOWL	AUTHOR: CLM	REVISION: 3

A.4.5 Land Capability Classification for Waterfowl¹

In general, the needs of all waterfowl are similar; the individual of each species requires sufficient amounts of the proper food, protective cover, and space to survive, grow, and reproduce. The land's ability to meet these needs is determined by the individual requirements of the species, or group under consideration, the physical characteristics of the land, and other factors that influence the plant and animal communities.

The land is divided into units on the basis of physiographic characteristics important to waterfowl populations. The degree of limitation associated with each unit determines its capability class. The subclass denotes the primary factor that causes the limitation.

This classification system is based on two important considerations:

- Capability ratings are established on the basis of the optimum vegetational stage (successional stage) that can be maintained when good wildlife management is practiced.
- Capability ratings assigned do not reflect present land use (except in extreme cases such as heavily populated urban areas), ownership, lack of access, distance from cities, or amount of hunting pressure.

CLASSES

- 1 - LANDS IN THIS CLASS HAVE NO SIGNIFICANT LIMITATIONS TO THE PRODUCTION OF WATERFOWL**

Capability on these lands is high. They provide a wide variety and abundance of important habitat elements. Rolling topography is well-suited to the formation of wetlands. Predominant water areas on these lands include shallow and deep permanent marshes, and deep, open water areas with well-developed marsh edges.

- 1S - Water areas in this special class are Class 1 areas also serving as important migration stops.**

1 For more information refer to, "Land Capability Classification for Wildlife" Report No. 16 1981 Lands Directorate, Environment Canada.

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LANDS DIRECTORATE ENVIRONMENT CANADA

CLDS/CGIS

CATALOGUE OF REPORTS

SECTION: A. CANADA LAND INVENTORY DATA	DATE: OCT 83	PAGE: A-27
SUB-SECTION: A.4 WATERFOWL	AUTHOR: CLM	REVISION: 3
2 - LANDS IN THIS CLASS HAVE VERY SLIGHT LIMITATIONS TO THE PRODUCTION OF WATERFOWL Capability on these lands is high but less than Class 1. Slight limitations are due to climate, fertility, or soil permeability. Topography tends to be more undulating than rolling; a higher proportion of the water areas than in Class 1 are small temporary ponds or deep, open water areas with poorly developed marsh edges.		
2S. Water areas in this special class are Class 2 areas also serving as important migration stops.		
3 - LANDS IN THIS CLASS HAVE SLIGHT LIMITATIONS TO THE PRODUCTION OF WATERFOWL Capability on these lands is moderately high, but productivity may be reduced in some years because of occasional drought. Slight limitations are due to climate or to characteristics of the land that affect the quality and quantity of habitat. These lands have a high proportion of both temporary and semi-permanent shallow marshes poorly interspersed with deep marshes and bodies of open water.		
3S - Water areas in this special class are Class 3 areas also serving as important migration stops.		
3M - Lands in this special class may not be useful for waterfowl production, but are important as migration or wintering areas. This class has no subclasses.		
4 - LANDS IN THIS CLASS HAVE MODERATE LIMITATIONS TO THE PRODUCTION OF WATERFOWL Capability on these lands is moderate. Limitations are similar to those in Class 3, but the degree is greater. Water areas are mainly temporary ponds, or deep, open waters with poorly developed marsh edges, or both.		
5 - LANDS IN THIS CLASS HAVE MODERATELY SEVERE LIMITATIONS TO THE PRODUCTION OF WATERFOWL Capability on these lands is moderately low. Limitations are usually a combination of two or more of the following factors: climate, soil moisture, permeability, fertility, topography, salinity, flooding, and poor inter-persion of water areas.		

SECTION: A. CANADA LAND INVENTORY DATA	DATE: OCT 83	PAGE: A-28
SUB-SECTION: A.4 WATERFOWL	AUTHOR: CLM	REVISION: 3

6 - LANDS IN THIS CLASS HAVE SEVERE LIMITATIONS TO THE PRODUCTION OF WATERFOWL

Capability on these lands is very low. Limitations are easily identified. They may include aridity, salinity, very flat topography, steep-sided lakes, extremely porous soils, and soils containing few available minerals.

7 - LANDS IN THIS CLASS HAVE SUCH SEVERE LIMITATIONS THAT ALMOST NO WATERFOWL ARE PRODUCED

Capability on these lands is negligible or nonexistent. Limitations are so severe that waterfowl production is nearly or completely precluded.

SUBCLASSES

With the exception Class 1, and special Class 3M, classes are divided into subclasses according to the nature of the limitations that determine the class. The following subclasses are used to denote significant limiting factors that may affect either the waterfowl or the ability of the land to produce suitable habitat conditions.

- A - Aridity - The limitation is an arid condition of the land, or the susceptibility of the land to periodic droughts resulting in low pond water levels or premature drying of marshes during the breeding season.
- B - Free-flowing water - The limitation is usually due to fast or excess water flow, which inhibits development of marsh habitat along stream edges. It may also be due to a lack of flow through low-lying land, which results in poor quality habitat.
- C - Climate - A combination of adverse climatic factors may act to reduce favourable habitat, and thus the production and survival of waterfowl.
- F - Fertility - The limitation indicates insufficient nutrients in the soil and water for optimum plant growth.
- G - Landform - Poor distribution or interspersation of marshes or basins may be a limiting factor of the land and may prevent the development of an optimum waterfowl habitat.

CLDS
LANDS DIRECTORATE
ENVIRONMENT CANADA

CLDS/CGIS
CATALOGUE
OF REPORTS

SECTION:	A. CANADA LAND INVENTORY DATA	DATE	OCT 83	PAGE:	A-29
SUB-SECTION:	A.4 WATERFOWL	AUTHOR	CLM	REVISION	3

- I - Inundation - The limiting factor is excessive water level fluctuation, or tidal action adversely affecting the habitat or the nesting success of waterfowl.
- J - Reduced marsh edge - The limitations are topographic features adversely affecting development of optimum marsh conditions along the edge of water areas.
- M - Soil moisture - Poor water holding capacity of soils, adversely affecting the formation and permanency of water areas.
- N - Adverse soil and water characteristics - Excessive salinity, alkalinity, acidity, lack of essential trace elements, or abundance of toxic elements may limit the development of plant and animal communities essential for waterfowl production.
- R - Soil depth - Restriction of the rooting zone by bedrock or other impervious layers may limit development of suitable plant communities.
- T - Adverse topography - Steepness or flatness of the land may limit the development or permanency of wetlands.
- Z - Water depth - Excessively deep or shallow waters may limit the development of optimum waterfowl habitat.

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LANDS DIRECTORATE
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CLDS/CGIS
CATALOGUE
OF REPORTS

SECTION: A. CANADA LAND INVENTORY DATA	DATE OCT 83	PAGE: A-30
SUB-SECTION: A.4 UNGULATES	AUTHOR CLM	REVISION 3

A.4.6 Land Capability Classification for Ungulates¹

In general, the needs of all ungulates are similar; the individual of each species requires sufficient amounts of the proper food, protective cover, and space to survive, grow, and reproduce. The land's ability to meet these needs is determined by the individual requirements of the species, or group, under consideration, the physical characteristics of the land, and factors, such as climatic, which influence plant and animal life.

The land is divided into units on the basis of physiographic characteristics important to wild ungulates. The degree of limitation associated with each unit determines its capability class. The subclass denotes the primary factor that causes the limitation.

The classification system is based on two important considerations:

- Capability ratings are established on the basis of the optimum vegetational stage (successional stage) that can be maintained with good wildlife management practices.
- Capability ratings assigned do not reflect present land use (except in extreme cases such as heavily populated urban areas), ownership, lack of access, distance from cities, or amount of hunting pressure.

CLASSES

- 1 - LANDS IN THIS CLASS HAVE NO SIGNIFICANT LIMITATIONS TO THE PRODUCTION OF UNGULATES

Capability on these lands is high. They provide a wide variety and abundance of food, plants and other habitat elements.

- 1W - Lands in this special class are Class 1 winter ranges on which animals from surrounding areas depend.

1 For more information refer to "Land Capability Classification for Wildlife" Report No. 7 1969 Lands Directorate, Environment Canada.

CLDS
LANDS DIRECTORATE
ENVIRONMENT CANADA

CLDS/CGIS
CATALOGUE
OF REPORTS

SECTION: A. CANADA LAND INVENTORY DATA	DATE OCT 83	PAGE A-31
SUB-SECTION: A.4 UNGULATES	AUTHOR CLM	REVISION 3

- 2 - LANDS IN THIS CLASS HAVE VERY SLIGHT LIMITATIONS TO THE PRODUCTION OF UNGULATES

Capability on these lands is high, but less than Class 1. Slight limitations are due to climatic, or other factors.

- 2W - Lands in this special class are Class 2 winter ranges on which animals from surrounding areas depend.

- 3 - LANDS IN THIS CLASS HAVE SLIGHT LIMITATIONS TO THE PRODUCTION OF UNGULATES

Capability on these lands is moderately high, but productivity may be reduced in some years. Slight limitations are due to characteristics of land that affect the quality and quantity of habitat, or to climatic factors limiting the mobility of ungulates, or the availability of food and cover.

- 3W - Lands in this special class are Class 3 winter ranges on which animals from surrounding areas depend.

- 4 - LANDS IN THIS CLASS HAVE MODERATE LIMITATIONS TO THE PRODUCTION OF UNGULATES

Capability on these lands is moderate. Limitations are similar to those in Class 3, but the degree is greater.

- 5 - LANDS IN THIS CLASS HAVE MODERATELY SEVERE LIMITATIONS TO THE PRODUCTION OF UNGULATES

Capability on these lands is moderately low. Limitations are usually a combination of two or more factors of climate, soil moisture, fertility, depth to bedrock or other impervious layer, topography, flooding, exposure, and adverse soil characteristics.

- 6 - LANDS IN THIS CLASS HAVE SEVERE LIMITATIONS TO THE PRODUCTION OF UNGULATES

Capability on these lands is very low. Limitations are so severe that they are easily recognized; for example, soil depth may be negligible or climatic factors so extreme that ungulate populations are severely reduced.

- 7 - LANDS IN THIS CLASS HAVE LIMITATIONS SO SEVERE THAT THERE IS NO UNGULATE PRODUCTION

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LANDS DIRECTORATE
ENVIRONMENT CANADA

CLDS/CGIS
CATALOGUE
OF REPORTS

SECTION: A. CANADA LAND INVENTORY DATA	DATE OCT 83	PAGE: A-32
SUB-SECTION: A.4 UNGULATES	AUTHOR CLM	REVISION 3

SUBCLASSES

With the exception of Class 1, the classes are divided into subclasses according to the nature of the limitations which determine the class. In most cases, the limitations do not affect the animals themselves, but rather the ability of the land to produce suitable food and cover plants. For convenience the subclasses are placed in two main groups: those relating to climate and those relating to inherent characteristics of the land.

Climate

The following subclasses are used to denote significant climatic factors that may affect either the animals or the ability of the land to produce suitable food and cover:

- A - Aridity - Drought or aridity that adversely affects the habitat;
- C - Climate - A combination of climatic factors acting to reduce favourable habitat, and the production and survival of ungulates;
- D - Snow depth - Excessive snow depth that reduces the mobility of ungulates and availability of food plants;
- U - Exposure or aspect - Special climatic factors, such as exposure to prevailing winter winds, that adversely affect the animals or their habitat.

Land

The following subclasses are used to denote significant characteristics of land that limit its usefulness for producing suitable food and cover. Some may also have a slight adverse effect on the animals:

- F - Fertility - Lack of nutrients in the soil for optimum plant growth;
- G - Landform - Poor distribution or interspersions of landforms necessary for optimum ungulate habitat;

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LANDS DIRECTORATE ENVIRONMENT CANADA

CLDS/CGIS CATALOGUE OF REPORTS

SECTION: A. CANADA LAND INVENTORY DATA	DATE OCT 83	PAGE: A-33
SUB-SECTION: A.4 UNGULATES	AUTHOR CLM	REVISION 3

- I - Inundation - Excessive water level fluctuation or tidal action that adversely affects the habitat or survival of ungulates;
- M - Soil moisture - Poor soil moisture, either excessive or deficient;
- N - Adverse soil characteristics - Excessive salinity, lack of essential trace elements or abundance of toxic elements in the soil;
- R - Soil depth - Restriction of the rooting zone by bedrock or other impervious layers;
- T - Adverse topography - Either steepness or flatness of the land.

UNGULATE INDICATOR SPECIES

Species of ungulates for which capability ratings are assigned are shown by the following symbols:

- A Antelope
- C Caribou
- D Deer (white-tailed deer, Columbia
black-tailed deer, mule deer)
- E Elk
- G Mountain Goat
- M Moose
- S Mountain Sheep

CLDS
LANDS DIRECTORATE
ENVIRONMENT CANADA

CLDS/CGIS
CATALOGUE
OF REPORTS

SECTION: A. CLASSES OF INFORMATION	DATE OCT 83	PAGE: 4-34
SUB-SECTION A.5 Lands Directorate Offices	AUTHOR CLM	REVISION 3

A.5 Lands Directorate Offices

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Ottawa, Ontario

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Lands Directorate
Atlantic Region
Environment Canada
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45 Alderney Drive
Dartmouth, N.S.
B2Y 2N6

Phone: (902) 426-4196

Lands Directorate
Pacific and Yukon Region
Environment Canada
Room 904, 1001 West Pender Street
Vancouver, British Columbia
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Lands Directorate
Ontario Region
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